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Literary Contents.

PAGE	PAGE
Corner for Students 358	French Pharmaceutical News... 337
Correspondence:—	Gazette 364
The Irish Pharmacy Act; Graduated Bottles 369	German Apotheker-Verein ... 357
Soluble Essence of Ginger; Toughened Glass; Ointment Pots; Medicine Stamps 370	Leaderettes 356
Legal Queries 370	Metropolitan Reports 336
Dispensing Notes 371	New Companies 353
Miscellaneous Inquiries ... 371	Personalities 363
Editorial Notes:—	Pharmaceutical Education in Switzerland 358
Educational 354	Pharmaceutical Society of Ireland:—
The Irish Pharmacy Act; The Unofficial Formulary.. 355	Council Meeting 360
Educational Information:—	Another Abortive Prosecution 360
Pharmaceutical 338	Provincial Reports 336
Scientific 344	Trade Notes 364
Medical 347	Trade Report:—
Dental 351	London 365
Veterinary 352	New York 367
	Amsterdam 367
	Trade Statistics 368

IN this issue we give full information regarding the education and examinations which are specially interesting to pharmacists. The various articles have been compiled from official sources, and give the gist of what it is useful to know. In our advertisement pages a number of the educating and examining bodies enter more fully into the details of their work. Mr. Joseph Ince writes from Lausanne on pharmaceutical education in Geneva. His article appears on p. 358.

MR. S. V. MORGAN, one of the proprietors of this journal, who has been travelling through Scandinavia and Russia, called upon Mr. Carl Ferrein, one of our subscribers at Moscow, and the largest pharmacist in that capital, and collected some interesting information regarding Russian pharmacy.

AMONGST the poisoning cases this week are that of a three-year-old child who died at Sheffield from drinking vitriol, and of a youth who died at Belper from the effects of a draught of laudanum. The dead body of a man (50) was also found in a field near Bishop Auckland. At the inquest it came out that he had been in the habit of taking morphia, and this in conjunction with a weak condition of the heart was the cause of death.

THE International Medical Congress, whose meetings were held in Washington last week, came to a finish on Saturday. It was agreed that the next meeting should be held in Berlin three years hence, and it is highly probable that Dr. Virchow will then fill the presidential chair. At the concluding meeting on Saturday, Dr. Grailey Hewitt, of London, was the spokesman of the foreign delegates in thanking our American cousins for the benefits of the meeting.

THE MILAN QUININE FAILURE.—The trial of Alexander Boehringer and Christian Boehringer, formerly directors of the Fabbrica Lombarda de Prodotti Chimici, the Milan quinine works, the failure of which caused so great a sensation a few years ago, was finally concluded at Milan last week only. Both the accused were found guilty of acts of fraudulent bankruptcy, and sentenced—Alexander to fifteen and Christian to ten years' imprisonment. The accused having decamped in time, the sentences apply in *contumaciam* only.

DR. TANNER ON THE DRUGS OF THE NAVY.—In the House of Commons on September 9, on the vote of 75,400%, for medicine, medical stores, &c., Dr. Tanner said the drugs in the naval hospitals and on board the ships were of an inferior quality. He also complained that the buying of perishable drugs in large quantities led to great waste, and stated that he had seen a quantity of "German" quinine, which was an inferior quality of the drug, on board the *Devastation*. Lord C. Beresford assured the hon. member that they took the greatest possible care to get drugs and medicines of the very best quality. Formerly, he admitted, there was a certain waste in issuing these stores, but that was owing to a bad system of organisation. As to the quinine, he believed they got the very best. He would, however, make inquiries with reference to what had fallen from the hon. gentleman.

AS OTHERS SEE US.—It might be an interesting subject for a prize competition to name, say, the thirteen gentlemen of the two hundred odd constituting the Manchester Conference who are most famous outside the English-speaking world. Meanwhile this question has to some extent been anticipated by the *Zeitschrift des Oesterr. Apotheker Vereins*, which, in its latest issue, contains an account of the Manchester gathering. With charming *naïveté* this journal informs its readers that the Conference was attended by no less than 249 persons, among whom were found "pharmacists, chemists, wholesale druggists, and university professors," and including "such men of world-wide fame as Flückiger, A. Fraser, Dr. Atkinson, D. Hooper, Thomas Christy, S. M. Burroughs, A. W. Gerrard, E. M. Holmes, J. E. Saul, F. Schacht, Ad. (!) Martindale, H. Helbing, and W. Kirby." As a matter of fact, some of these men of light and leading were not present at the Conference at all; but, nevertheless, the selection gives a good idea of the persons who, in Austria at least, are considered typical representatives of British pharmacy.

ARTIFICIAL QUININE POPPING UP AGAIN.—We earnestly entreat holders of quinine not to be led into a panic by the following announcement:—

"We are pleased to be able to inform our readers that the lawsuit respecting Dr. Cresswell-Hewett's discovery of artificial quinine is at an end. The inventor is now ready to commence the work of manufacturing the artificial quinine in Belgium, a country to which he is attached by bonds of affection and sentiment. By this new process of manufacture the price of quinine will be reduced to one-tenth of its actual value. The English journals have long ago recognised the extreme importance of Dr. Cresswell-Hewett's discovery."

We translate this paragraph from the editorial columns of *L'Hotel-de-Ville* of September 11, and beg to add, for the benefit of all concerned, that the journal in question is a weekly print, published at Brussels, and boasting of the subsidiary title, *Organe des Honnêtes Gens*. It is of course quite proper that *The Town-Hall, Organ of the Honest People*, should have been selected as the vehicle for the publication of the projects of so prominent a member of the honest community as Dr. Cresswell-Hewett. Persons interested in that gentleman's movements will feelingly note that the "bonds" which attach the Doctor to his new home are merely those of affection and sentiment, and there is a widespread opinion that so clever an inventor ought not to have been suffered to withdraw the benefits of his genius from his native land without at least an effort to bind him to it by bonds stronger than those now allying him to the Belgian capital. Spurned by London, Dr. Cresswell-Hewett seems determined to stick to the honest men of Brussels.

Metropolitan Reports.

THREE MILK-DEALERS were successfully prosecuted at Worship Street Court on the 8th, for selling milk adulterated to the extent of from 12 to 25 per cent.

DESTITUTION AND POISON.—Dr. Diplock held an inquest on Saturday at Kilburn, on the body of Alfred Sharpe (41), a warehouseman, who had been out of employment since Christmas, and had become so down-hearted that he called upon Mr. Newton, chemist, Carlton Terrace, and bought two-pennyworth of oxalic acid "to clean brasses." He was cautioned about its poisonous properties, but that he knew too well, and went home and swallowed the poison.

SIR HENRY DOULTON was summoned before the magistrates on the 8th inst. for an alleged smoke nuisance at his works in Lambeth, but he was able to show that during the last thirty-five years he had made the abatement and consumption of smoke a close study, and had expended a large sum in introducing improvements. The policemen had watched his chimney for a long time, and had only noticed smoke come from it for ten minutes. The case was adjourned *sine die*.

Provincial Reports.

Items of news, and newspapers containing matters of interest to the trade, sent to the Editor, will much oblige.

BIRMINGHAM.

IMPERFECT DIAGNOSIS.—A Birmingham chemist was one day looking down the street for customers when he observed a man limping along as if in great pain. Our worthy confrère immediately despatched his pupil in the direction of the man, with orders to say that his master was a chemist, and that if he pleased he would supply him with some excellent gout and rheumatic pills at 3d. per box, which would remove his pain. The limping man turned round sharply and told the pupil to tell his master that his pills would do him no good, as he had broken his leg.

CHEMISTS have themselves to blame, says the *Birmingham Daily Gazette*, for the scant notice accorded their annual conferences. So long as they persist in meeting in the same town and at the same time as the British Association, they must expect to find their discussions dwarfed and their papers pooh-poohed in favour of the (sometimes) more important matters considered at the more brilliant assembly. It is often the case that every word spoken at the Pharmaceutical Conference has a direct and practical bearing upon the inner welfare of the great majority of ailing ones, while the essays read before the British Association may be full of the infinite and sublime.

EXCISE PROSECUTION FOR THE SALE OF METHYLATED TINCTURES.—For some time past it has been rumoured in Birmingham that the Inland Revenue authorities were investigating a case of the sale by a local firm of wholesale druggists of medicinal tincture made with methylated spirit. A summons was issued returnable at the Moor Street Police Court on Wednesday last against the firm in question, for having sold tincture of rhubarb so manufactured, and a Somerset House analyst was instructed to proceed to Birmingham to give evidence in support of the charge. The hearing of the case has, however, been adjourned in order, we understand, that the defendants may be enabled to take further steps to endeavour to convince the Board of Commissioners that the substitution of methylated for proof spirit was due to an unfortunate error in the course of the preparation of the tincture, and that no fraud on the excise authorities or the public was intended.

DARLASTON.

THE USE OF LAUDANUM.—The Coroner held an inquest on Wednesday last, on the body of a male child, aged five

weeks, whose mother had given it a small dose of laudanum, on the advice of a relative, and four or five hours later it was taken with convulsions, which lasted till night, and ended in death. It had been more or less troubled with convulsions since its birth, and the jury's verdict was "Death from convulsions." In the course of the proceedings it was mentioned that laudanum was very extensively resorted to by the inhabitants of the town in times of ill-health, for their own use and the use of their children, and the coroner and jury commented on the dangers incident to the practice.

DURHAM.

A CURIOUS POINT IN A MILK CASE.—At the Police Court, Consett, some time ago, a summons was preferred by Supt. Oliver, under the Food and Drugs Act, against Mr. Robert Brown, a dairyman, for having sold as milk an article which Mr. W. F. K. Stock (county analyst, Darlington) certified to be deficient in fat to the extent of 68 per cent. The defence was that the milk was quite pure and was just as it was taken from the cow, the sample being obtained from the can during the process of milking. Mr. Brown also produced a certificate from Mr. Pattison, analyst for Northumberland, who reported a sample of milk from the same animal to be deficient in fat 69 per cent. The magistrates accordingly adjourned the case for further investigation. At the Petty Sessions last week, Supt. Oliver reported that he had taken a sample of milk from the same cow and submitted the same to Mr. Stock for analysis. His certificate was that the milk was almost identical with the preceding sample for which the defendant was summoned. Mr. Stock also sent him an analysis showing that the first portion of milk taken from the cow was almost devoid of fat—so much so that only one per cent. of fat was contained in the fluid, but this gradually increased as the process went on till it reached a much greater percentage. It was therefore impossible for the fat to have been removed from the milk, and Supt. Oliver asked permission of the Bench to withdraw the summons. After a long consultation, the magistrates gave their consent.

LIVERPOOL.

DANGEROUS "SALTS."—At the police court on September 8, Messrs. Wilson, Son & Co., agents for the Cork Steamship Company, were fined 20l. and costs for allowing a case containing pentachloride of phosphorus to be brought into the Nelson Dock without properly labelling it. When the ship got into the dock it was found that the case was on fire apparently, and it was afterwards determined that it contained several bottles of pentachloride of phosphorus. The case was labelled "Salts."

FIRE AT A ST. HELENS CHEMICAL FACTORY.—On Tuesday evening fire was discovered in the stores of the Greenbank Alkali Works, St. Helens. The storekeeper had locked up the place and left the works at half-past five o'clock, when everything was apparently safe. The stores contained a large stock of oil, tar, paraffin, and other inflammable materials, and they burnt fiercely. In spite of a difficulty in getting a supply of water, the firemen and workmen succeeded in preventing the fire from spreading to the adjoining buildings, and in about two hours the flames were got under. The damage is over 1,000l., and is covered by insurance.

THEFTS FROM CHEMISTS' SHOPS.—At the Birkenhead Police Court on Tuesday, two boys (brothers), aged eight and eleven respectively, were found guilty of stealing three tablets of soap from the shop of Mr. Woodcock, chemist, Church Road, and three bottles of benzine, a bottle of vanilla, and a bottle of toothache tincture from the shop of Mr. Price, chemist, Church Road. On Monday afternoon the boys went into Mr. Price's shop and asked for a cork. When the assistant's back was turned to give them the cork, Mr. Price saw them take the things. The magistrate sentenced the elder boy to receive six strokes of the birch.

LOWESTOFT.

"PAREGORIC SUBSTITUTE."—A GROCER FINED.—At the Police Court on the 7th inst., Samuel Edwards, grocer, was summoned for selling paregoric not of the quality required by the statute. The Town Clerk, who supported the informa-

tion, said the analysis proved that there was no opium in the substance sold, and it was therefore not paregoric, as prescribed in the British Pharmacopœia. It was dangerous to sell this substitute, because serious results might follow if persons bought the genuine article. George Youngman proved the purchase. The defendant asked whether "this stuff" would do—pointing to a bottle; and witness repeated he wanted paregoric—paregoric for a baby. (A bottle was produced in court by Mr. Adamson, who appeared for the defendant, which was labelled "Paregoric substitute, supplied by Messrs. Bell & Co.") Witness said he saw this bottle in defendant's shop, but he could not read the label. Philip Kelt, the sanitary inspector, said there had been a great many complaints of grocers selling paregoric substitute in Lowestoft. He asked the last witness to act as his agent, and as soon as Youngman had purchased the paregoric he went into the shop and bought another twopenny worth, which he divided into three portions as required by the Act, one of which he gave to the defendant, another he sent to the public analyst, and the third portion he kept himself. In cross-examination, witness said he was aware that only a registered chemist could sell paregoric under the Pharmacy Act. When he entered the shop the bottle labelled "Paregoric substitute" was standing on the counter. The Rev. J. F. Reeve, one of the magistrates, said the label was most misleading, as the general public could not draw subtle distinctions like the Bench. Another magistrate observed that the essence of paregoric was absent from this substance. Defendant said he was very sorry for what had occurred, but he assured the Bench he had no intention to deceive anyone. He bought the bottle of stuff of Messrs. Bell twelve months ago, and he had only sold two doses. It was an omission on his part not to have told Youngman that he did not sell paregoric, but only paregoric substitute. The Chairman said the Bench had decided to convict the defendant. It was most dangerous for a grocer to sell this substitute, because a mother might give her baby a dose of it and it would be all right, but if she happened to buy the real thing and gave the child a dose of that, most serious results might follow. Defendant would be fined 1*l.* and 1*l.* 1*s.* costs.

MIDDLESBOROUGH.

NEW SALT COMPANY.—The business of Messrs. Bolckow, Vaughan & Co., salt-workers, is to be changed into a limited liability company, with a capital of 75,000*l.* in 7,500 shares of 10*l.* each. The present salt-works of the firm comprise a borehole on freehold property at Middlesborough, and one at Eston, both capable of making about 450 tons of salt per week.

NEEDHAM MARKET.

A SEDATIVE MEDICINE.—An inquest was held last week on the body of Joseph Welham (22), a barman. Deceased, who suffered from fits, told his mother that he had drunk a whole bottleful of medicine, and died shortly afterwards. Mr. John William Harper, surgeon, Stowmarket, stated at the inquest that he had attended the deceased for attacks of *delirium tremens*. One dose of the medicine he gave him would be a good sedative. The bottle contained twelve doses, and the whole bottleful would cause death. Verdict according to this evidence.

FRENCH PHARMACEUTICAL NEWS.

(From our Paris Correspondent.)

PHARMACIST MAJOR GESSARD has, after a competition with other candidates, been appointed *agrégé* professor of chemistry at the school attached to the Val de Grâce hospital. He is soon to replace *agrégé* Raby, whose term is expiring.

M. PASTEUR has now the right to style himself Baron Pasteur, the Emperor of Austria having conferred on him the order of the Iron Crown, which bestows on its possessor the title of Baron and nobiliary privileges. It is thought likely that he will not avail himself of the flattering addition to his name, but prefer to remain plain Pasteur, without even the *Monsieur* before it.

THE RABBIS AND THE GENEVA CROSS.—In actual war, ambulance surgeons, pharmacists, and *infirmiers* wear the Geneva cross, so do the army chaplains. During the present mobilisation there was some doubt as to the action of the army rabbis respecting the Christian emblem. It appears they have without demur agreed to wear it on their arm, but instead of the silver cross suspended from a red ribbon worn round the neck by the Catholic and Protestant ecclesiastics, the rabbis choose a silver medal with Jewish emblems.

MORE PRIZES FOR THE ACADEMY OF SCIENCES.—Mme. Foehr, lately deceased in Paris, has given to the Academy a sum of 40,000*f.* to be invested in national stock, and the income to be awarded yearly, under the name of "Dellion Prize," to a meritorious work or paper on the art of healing. Another benefactor has just left a bequest sufficient to found a 2,000*f.* prize to be given every second year, and to be known as the "Pourrat Prize," after the name of the founder. It is to reward the best work on a medical or surgical question to be selected by the Academy.

THE PARIS WATER SUPPLY.—The commission appointed by the Municipal Council to inquire into the effects of the lead casing of the Arcueil aqueduct have reported that no trace of lead can be found in the Vanne river water after its passage through the long conduit. The result was anticipated by all chemists conversant with the composition of the water. But more water being needed, the authorities consulted the Council of Hygiene as to the advisability of establishing a pumping station at Javel, the water to be used only for street sprinkling. The Council have reported adversely, saying that at Javel, below Paris, the Seine water is unfit for public consumption, and if it is ever procured there at all, the temptation will be too great, in time of scarcity, to use it for drinking purposes. This decision shows the Council of Hygiene to be an intelligent body. An engineer now proposes to bring water from the Lake of Geneva. The supply is pure, more abundant in summer than in winter, and the works would cost less than a railway of the same length. Quite tempting!

SULPHUROUS FUMIGATIONS.—The Havre Congress of Hygiene have agreed to publish a set of directions for disinfecting, for the benefit of doctors or masters of infected vessels. Brimstone, broken up in small pieces, should be placed in broad and shallow earthenware or cast-iron dishes, of about 1 litre capacity. The vessels should be of one piece, without solder, and, as a precaution against fire, should be placed in tubs holding 2 or 3 in. of water. To light the brimstone, either sprinkle it with a little alcohol, or tip it with a little cotton wadding dipped in the same liquid. For each cubic metre of room, 30 grammes of sulphur are requisite, or about 1 oz. for each 40 cubic feet, all the openings being kept tightly closed for twenty-four hours. How to proceed when a large space is to be disinfected, and how to open the doors after fumigating, are described in detail, but one of the characteristic cautions given by the wise men at Havre is to avoid as much as possible, on board steamers, to let sulphur fumes get into the engine-room—not that serious harm is to be apprehended, but because the vapours turn polished brass and steel an ugly red colour, which greatly displeases the engineers.

THE PARIS CHEMICAL SOCIETY.—The Treasurer's report for the last fiscal year, just now published, is interesting in more than one respect. As a rule the finances of a society afford a fair idea of its success, and their details give a good insight into its working. To begin with the capital fund, the Society has about 105,000*f.*—a little more than 4,000*l.*—invested in good securities, yielding an income of about 3,800*f.* The income from annual dues was nearly 10,000*f.*, indicating a membership of between five and six hundred, all told. During the past year an effort was made to bring the *Bulletin* up to the latest chemical discoveries published both in France and abroad. The editing committee set to work, and managed to publish forty-eight extra sheets, at a cost of 7,000*f.*, of which 5,000*f.* were supplied by voluntary contributions, but the balance, 2,000*f.*, taken out of the Society's fund, nearly exhausted the sum set apart for current expenses. For the coming year, a similar expenditure will have to be met, to print the supplementary sheets necessary to bring the *Bulletin* completely up to the present time. The money will no doubt be forthcoming. Taken altogether the Society appears to be prosperous and thriving.

EDUCATIONAL INFORMATION.

PHARMACEUTICAL.

GREAT BRITAIN.

DURING the past year a Bill was introduced into the House of Lords for the purpose of amending the Pharmacy Acts in so far as these relate to the qualifications of chemists and druggists. It was proposed to make the existing Minor examination a more thorough test of scientific training, and also to define that training, especially in regard to scholastic education of a technical character. Such, briefly stated, were the intentions of the Pharmaceutical Society in promoting the measure; but the Bill is defunct, and another ghost has been exorcised to hold sad communion with the shades of the departed by-laws. The legislative Lazarus in the heaven of St. Stephen's is slow in extending that shrieked-for drop of water to the parched and anxious lips of the Bloomsbury Square Dives. The resurrection of the Bill, should that happen, is not likely to affect pharmacy for a few years to come.

In this article we propose to tell how a youth may become a chemist and druggist, and what there is waiting for him after he becomes one.

PRELIMINARY TRAINING.

It cannot be too strongly impressed upon parents that before sending their sons to the calling of pharmacy they should ascertain if they have a fair ability for learning. We have come across young men who, after having met, from sheer inability to study, with repeated failures in the examination-room, have either settled down into spiritless hacks, or given up in disgust the vocation in which they have spent some of the best years of their lives. The Preliminary examination of the Pharmaceutical Society requires a knowledge of the first book of either Cæsar or Virgil, and a fair acquaintance with arithmetic and English, and should always be passed before a youth enters on his apprenticeship, or, better still, if he has learnt Greek or a modern language at school he might pass one of the examinations approved of by the Medical Council entitling him to register as a medical student, or which may be accepted by the examining bodies for degrees in arts or science, as not infrequently the pharmacist after a time forsakes the pestle for something higher. Having enrolled himself as a votary to the pharmacy shrine, the youth should at once begin to lay that scientific basis which will be ever afterwards of use to him. In doing so it is desirable that he should proceed methodically. The South Kensington science classes are a valuable aid, but in the case of the student with whom we are now dealing much time may be lost over them. During the first two winters of his pupillage he might attend the lectures on inorganic and organic chemistry; botany; acoustics, light, and heat; and magnetism and electricity; but subsequently his studies should be conducted in a more strictly pharmaceutical direction, as we have known students to distinguish themselves in the South Kensington chemistry examinations who have failed to satisfy the censors at the "Square." We place his extra-shop duties first, not because we think them the most important, but because we wish our second admonition to be the more prevailing. While lectures may make the student, it is the shop which makes the man—the business man—the chemist and druggist. In cleaning the inside or dusting the outside of a bottle there are two ways—a right and a wrong—the apprentice must learn the former, and think it not *infra dig.* to attempt honours in that line. Spartan parents used to make their children for a time assume the dress and perform the duties of slaves in order that they might ultimately understand their duties as masters, and the apprentice must not be averse to ascending with soiled fingers and labour-marked toilet to the throne of official perfection. There are few more disagreeable spectacles than that of a person who takes

no interest in his daily duties, but whose chief desire after opening shop in the morning is to see the hour for closing. Especially is the sight deplorable in the young. We would repeat the oft-given advice to the tyro in pharmacy to have always at hand a note-book for the daily jotting down of difficulties met and overcome in the shop or laboratory—the book will prove not only of present benefit but interesting and useful reading in after-life. As a pharmaceutical Nestor has said, "Acquire the useful habit of noting any thought suggested by your work or reading, for I believe many fruitful ideas are lost by not being registered at their birth. The CHEMISTS' AND DRUGGISTS' DIARY is very useful for that purpose."

EXAMINATION REQUIREMENTS.

Here it is convenient to introduce the official syllabus of the examinations for the title "Chemist and Druggist." They are two in number, viz., the Preliminary and the Minor; but as the Pharmacy Acts only authorise the Pharmaceutical Society to impose one examination (the Minor) for that title they are regarded as parts of one.

FIRST, OR PRELIMINARY, EXAMINATION.

This examination is held at the following centres throughout Great Britain, at 11 A.M., on the second Tuesdays in January, April, July, and October:—Aberdeen, Birmingham, Brighton, Bristol, Cambridge, Canterbury, Cardiff, Carlisle, Carmarthen, Carnarvon, Cheltenham, Darlington, Douglas, (Isle of Man), Dundee, Edinburgh, Exeter, Glasgow, Guernsey, Hull, Inverness, Jersey, Lancaster, Leeds, Lincoln, Liverpool, London, Manchester, Newcastle, Northampton, Norwich, Nottingham, Oxford, Peterborough, Sheffield, Shrewsbury, Southampton, Truro, Worcester, York.

Candidates must give notice to the Registrar (17 Bloomsbury Square, London, W.C.), on a printed form to be obtained from him, and pay the fee not less than fourteen days prior to that on which the examination is to be held. The examination is wholly in writing, and comprises:—

Latin.—Grammar, translation of simple sentences from English into Latin; translation into English of a paragraph from Cæsar, "De Bello Gallico," Book I., or Virgil, "Æneid," Book I. In each examination paper a passage from both of these authors is given, but a candidate is required to translate one only of each such passages.

Arithmetic.—The first four rules, simple and compound, vulgar fractions and decimals, simple and compound proportion, a thorough knowledge of the British and metrical systems of weights and measures.

English.—Grammar and composition.

In awarding marks, spelling and the quality of the handwriting are taken into account. The time allowed for each subject is an hour and a half.

A certificate of having passed any of the following examinations will be accepted in lieu of the Preliminary examination, provided that Latin, arithmetic, and English be included in the subjects of the examination for which the certificate has been granted:—Local and higher examinations of the Universities of Oxford, Cambridge, Durham, Edinburgh, Aberdeen, Glasgow, St. Andrews, and Queen's University in Ireland; also the Matriculation and Preliminary examinations of these and the following:—University of London, Victoria University, University of Dublin, Royal University of Ireland, Royal College of Surgeons of England, Royal Colleges of Physicians and Surgeons of Edinburgh, Faculty of Physicians and Surgeons of Glasgow, Royal College of Surgeons in Ireland, Apothecaries' Hall of Ireland, and Incorporated Law Society. The certificates (first and second class) of the College of Preceptors, Owens College Junior Students' examination, Oxford and Cambridge Schools Examination Board, and of the Apothecaries' Society (London), in arts, are also accepted.

The questions set at the examinations are published in THE CHEMIST AND DRUGGIST as they occur.

MINOR EXAMINATION.

The candidates must have passed the Preliminary at least three months previously; be 21 years of age, a fact which must be attested by a registrar's certificate, and must have been engaged for three years in the translation and dispensing of prescriptions. Forms of application may be obtained from the Registrar, and candidates must deposit their applications and fees with him on or before the first day of the month in which the examination is held.

The following form the subjects of examination:—

Prescriptions.—The candidate is required to read without abbreviation autograph prescriptions; translate them into English; and render a literal as well as an appropriate translation of the directions for use. To detect errors, discover unusual doses, and have a general knowledge of Posology; also to render in good Latin ordinary prescriptions written in English.

Practical Dispensing.—To weigh, measure, and compound medicines; write the directions in concise language in a neat and distinct hand; to finish and properly direct each package. [*In awarding marks time is taken into account.*]

Pharmacy.—To recognise the preparations of the Pharmacopœia which are not of a definite chemical nature, and have well-marked physical characters, such as extracts, tinctures, powders, &c.; to give the proportions of the active ingredients and possess a practical knowledge of the processes, and the principles of the processes, by which they are made, and of the best excipients and methods of manipulation for forming emulsions, pills, &c.

Materia Medica.—To recognise specimens of roots, barks, leaves, fruits, resins, gums, animal substances, &c., used in medicine; give the botanical and zoological names of the plants, &c., yielding them, and the natural families to which they belong; name the countries and sources from which they are obtained, the official preparations into which they enter, and judge the quality and freedom from adulteration or otherwise of the specimens.

Botany.—To recognise the more important indigenous plants used in medicine. To possess a general knowledge of the elementary structure of plants, and the structure and distinctive characters of roots, stems, leaves, and their parts. To name and describe the various parts of the flower.

Chemistry.—To recognise the ordinary chemicals used in medicine. To possess a practical knowledge of the processes by which they are produced, the composition of such as are compound, and explain the decompositions that occur in their production and admixture, by equations or diagrams. To determine practically, by means of tests, the presence in solution of the chemicals in common use, and explain the reactions which occur in each case. To possess a general knowledge of the laws of chemical philosophy, and a practical knowledge of the means of determining specific gravities, densities, and temperature, and of the instruments appertaining thereto, and the physical and chemical constitution of the atmosphere.

The Minor examination is held six times a year in London, and four in Edinburgh, the Boards in the two centres being perfectly independent of one another; but it is a popular fallacy amongst students that the Edinburgh examination is the less difficult, or fairer, one. Many complaints are made both by tutors and students that the examinations are annually made more difficult, and that the official syllabus gives little idea of the knowledge required by the examiners. How far this is correct may be judged by the following account of

"THE EXAMINATION AS IT IS,"

Prescription Reading.—There are several books of autograph prescriptions from all sorts and conditions of prescribers, and if the candidate has cultivated a taste for reading illegible caligraphy, his troubles are reduced. About half-a-dozen specimens are selected, these the candidate is expected to read in unabbreviated Latin, and to translate; any eccentricity in the matter of doses to be detected. Inquiries are made into the candidate's knowledge of doses, and he is asked such questions as how much opium is contained in pulv. ipecac. co. gr. $\frac{1}{2}$, or the quantity of perchloride of mercury in liq. hydrarg. perchlor., 3ss. A prescription written in English is finally given to him which is to be written in unabbreviated Latin.

Dispensing, the most important duty of the pharmacist, seems to be the one least known by the candidates, judging by the increasing number which succumb to it at each examination. This fact, however, may be accounted for by the imperfect nature of the test applied. Only one prescription, seldom containing more than two preparations, is submitted, and if an error in manipulation is made an opportunity does not occur for retrieving lost marks. There is no doubt that in this subject more than in any other haste and nervousness frequently send a good man out of the "room." Although attention is called to the fact that "in awarding marks time is taken into account," it is better for a man to be slow and sure than quick and imperfect. Half an hour is sufficient to dispense the prescription given, but the examiners allow a whole hour, and give marks for less time than that. Neatness in writing, capping, and papering are points to which the candidate should pay great attention, and no one should present himself until he has become proficient in spreading plasters and blisters, making suppositories, pessaries, bougies, and in silvering pills.

The **Pharmacy** examination will give the student a chance of distinguishing himself in the recognition of tinctures, extracts, &c.; but if he is not over-sensitive in the olfactory nerves he should at once tell the examiner so, and he will probably exempt him from recognition by smell if he has a good idea of the physical characters of the galenicals. The candidate is next subjected to a cross-examination on the Pharmacopœia, particular stress being laid upon the strength of preparations. As a rule, the proportion of the chief constituent of a compound only is required, the knowledge of the names of the others being about sufficient. The curiosity of the examiner is generally excited as to how the embryonic chemist has spent his apprenticeship, how many B.P. preparations he has made, the processes he has adopted, what excipients he would use for certain pill-masses, how he would, for instance, incorporate atropine or ext. opii in a suppository or pessary, and what he would moisten the mould with. Questions regarding weights and measures generally cross this table. The man who has infused an intelligent interest into his shop-work will find it now repay him.

Materia Medica.—The candidate is led to a table on which are a number of boxes containing roots, barks, leaves, resins, &c., and he will be asked to distinguish some of them, give the botanical names, habitats, active principles, the official preparations into which they enter, and to express an opinion as to their freedom or otherwise from adulteration. The different kinds of opiums and aloes are almost invariably inquired about. The student will probably find many specimens differing somewhat in appearance from those he has met with in commerce, and he must be on his guard against some samples dressed up to imitate others. A favourite pastime of the examiners is to show a box containing a mixture of roots, barks, &c., with instructions to pick out the official ones.

In **Botany** some indigenous plants, leaves, flowers, or fruits are shown, and their names and characters required, and recently the natural orders of the commoner ones have been asked, with reasons for classification. Dried specimens of indigenous medicinal plants have to be recognised. A description in technical language of the various parts of the flower; the distinctions between the various fruits; the forms, modifications, and appendages of leaves, and the names applied to the varied margins, stem structure, the system of plant life, with some knowledge of the cryptogamia, may be wanted.

Chemistry.—During the examination a barometer is pointed out, a general description of its make and an explanation of its action being in nearly every case asked for. In the laboratory attention is drawn to some B.P. chemicals with a requisition to distinguish them and to explain their source and method of preparation and purification. One or more simple salts in solution or otherwise are next handed to the candidate for analysis, which he must perform in some approved method, explaining, if necessary, as he goes along, the reactions and the reasons for applying his tests. We have been informed that recently double salts have been given at this examination. If the gentleman under torture has proceeded so far without being "ploughed" he will be told to sit down, and his knowledge of physics, equations, and theoretical chemistry be inquired into.

The examination is oral throughout, and if the candidate

is particularly bad in any one subject he is not allowed to proceed further, so that to "get through the rooms" has come to be considered the next best thing to a pass, as it is a fair foundation for hope of success on the next attempt. Previous to October of last year the London candidate was not informed until next day as to his fate, but humane feelings have prevailed, and in London the Edinburgh custom is now followed, the candidate being at once informed of the result.

The *Modified Examination* is only for those who were assistants before or at the passing of the Pharmacy Act of 1868, and who indicated, before December 31, 1869, to the Registrar under the Act, their intention of undergoing the test. The examination is similar to the Minor, but candidates are not examined in botany and chemistry. If a candidate pass, he takes the same title as the Minor man at a third the cost.

THE MAJOR EXAMINATION.

The system of logic adopted whereby the holder of the Major certificate came to be called a pharmaceutical chemist we shall not attempt to follow, as life is too short. At one time, no doubt, pharmacy was one of the requirements demanded of those who aspired to the purely honorary title; but for many years the examination has been more of a general scientific than of a pharmaceutical character. Candidates for the title must have passed the Minor examination at least three months previously, and application has to be made in the same manner as before.

They are examined in the following subjects:—

Materia Medica.—This comprises a practical knowledge of the methods of estimating the value of important drugs; of obtaining their active proximate constituents in a separate state; of identifying them and ascertaining their purity or impurity by tests.

Botany.—This comprises an intimate acquaintance with the parts of the flower, fruit, and seed; the functions and mode of arrangement of the different organs of plants; a knowledge of the general principles of classification, and of the Linnean and De Candolle systems. The candidate must be able to distinguish practically between each of the following natural orders:—Ranunculaceæ, Papaveraceæ, Crucifere, Malvaceæ, Leguminosæ, Rosaceæ, Cucurbitaceæ, Umbellifere, Compositæ, Gentianaceæ, Convolvulaceæ, Solanaceæ, Atropaceæ, Labiata, Scrophulariaceæ, Polygonaceæ, Euphorbiaceæ, Orchidaceæ, Iridaceæ, Liliaceæ, Melanthaceæ, Graminaceæ; and refer to their respective orders such specimens as may be shown to him.

Chemistry.—This comprehends an intimate knowledge of the laws of chemical philosophy, a practical knowledge of the nature and properties of the elements and their compounds, both organic and inorganic, especially those used in medicine or the arts. The different combinations and decompositions must be explained by equations; also the qualitative analysis of the more important chemicals, *e.g.* nitrates, chlorides, carbonates, sulphates, phosphates, oxalates, tartrates, &c., and the detection of impurities in them, and the volumetric estimation of the strength of all Pharmacopœia preparations in which standard solutions are ordered to be used.

An elementary knowledge of the properties of light, heat, electricity, and magnetism is also required. In the practical portion of the Major examination standard works of reference are provided for the use of candidates, at the discretion of the examiner. No other books or memoranda are allowed.

The concluding sentences must be taken *cum grano salis*, for candidates are *expected* to do the work given them without referring to books—indeed, a table showing the molecular weights of the elements was at one time all the literature that was allowed to be consulted. The examination extends over two days; the first day of six hours is wholly devoted to practical chemistry, and in the second, if the candidate has passed the first, the other subjects are taken orally. The experiences of two candidates are detailed in this journal of August 21, 1886. The only political privilege which the Major qualification confers over those enjoyed by the Minor is the exemption from service on juries (in England and Wales only, not in Scotland). From their own point of view, at least, Major

men are the *haut ton* of the trade. They may aspire to the dignity of councillors of the Pharmaceutical Society, and *soupirent* to the honour of being appointed examiners, with the accompanying fee of three guineas a day and expenses. . . . The last ten words constitute an anti-climax. We know it and regret it, for the scientific pharmacist has a soul above guineas.

Fees.—The fee for the Preliminary is 2*l.* 2*s.*, which must also be paid if a certificate from another examining body is submitted; for the Minor, 3*l.* 3*s.*; and the Major, 5*l.* 5*s.* If a candidate fail to pass he can enter again after three months, and within a year (calculated from the first day of the month in which he was examined) on payment of a modified fee, viz.: Preliminary, 1*l.* 1*s.*; minor and major, 2*l.* 2*s.*

PHARMACEUTICAL SCHOOLS.

THE SCHOOL OF PHARMACY,

17 Bloomsbury Square, W.C.

This school, commenced in the same year as the formation of the Pharmaceutical Society (1842), is the oldest, but, for some reason, not the most largely patronised English school. It has educated many men who have risen to eminence in the scientific world. It is noteworthy, too, that the majority of the leading men in pharmacy are old students of this school, and they stick well together. The forty-sixth session will commence on Monday, October 3, and will terminate on Saturday, July 28, 1888. An address to students will be delivered by Sir Dyce Duckworth, M.D., on October 5, at 8 P.M., when students and friends of both sexes are invited.

CHEMISTRY (INCLUDING PHYSICS IN THEIR RELATION TO CHEMISTRY).

Professor Wyndham R. Dunstan, F.I.C., F.C.S.

Sixty lectures are given throughout the session, on Mondays, Tuesdays, and Wednesdays, at 9 o'clock.

Fees.—One course, 3*l.* 3*s.*; an entire session—two courses, 4*l.* 4*s.*; perpetual admission, 5*l.* 5*s.*

PRACTICAL CHEMISTRY.

Professor Attfield, Ph.D., F.R.S., F.I.C., F.C.S.

The laboratories are open from 10 to 5 daily, except Saturdays, when they close at 2 o'clock. Professor Attfield has recently adopted "the tutorial system" in his classes, and reports favourably on the results.

Fees.

Hours of Study	One Month	Two Months	Three Months	Five Months	Ten Months
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
10.0 to 5.0 daily (Sat. 10.0 to 2.0) ..	4 4 0	7 7 0	10 10 0	15 15 0	26 5 0
10.0 to 5.0 on any three days weekly ..	2 17 6	4 17 6	6 16 6	10 10 0	17 17 0
10.0 to 5.0 on any two days weekly ..	2 2 0	3 10 0	4 17 6	7 7 0	12 12 0
Any three hours daily ..	2 17 6	4 17 6	6 16 6	10 10 0	17 17 0
Any two hours daily ..	2 2 0	3 10 0	4 17 6	7 7 0	12 12 0

BOTANY.

Professor Joseph R. Green, B.Sc. Lond., B.A., Cantab.

1st Course.—Structural botany, and the physiology of the plant. October to February.

2nd Course.—Structural and physiological botany, but with especial reference to practical botany and the classification of plants. March to July.

MATERIA MEDICA.

Mr. E. M. Holmes, F.L.S., Curator of the Society's Museums.

Professor Bentley, who used to lecture on both of these subjects, having reached the Emeritus stage of professorship, has resigned his duties to younger men, who, we trust, will meet with the same success as their illustrious predecessor.

The lectures on botany are delivered every Friday and Saturday morning at 9 o'clock, and those on *materia medica* on Thursday mornings at 10 o'clock.

Fees.—For botany; one course, 2*l.* 2*s.*; an entire session (two courses), including classification of plants and practical botany, 3*l.* 3*s.*; classification of plants and practical botany, separately, 1*l.* 1*s.*; perpetual admission to all the courses, 4*l.* 4*s.* One guinea for each course is charged for the lectures on *materia medica*. These are, we understand, to be to a large extent of a tutorial character.

PHARMACY AND PRACTICAL PHARMACY.

Mr. Joseph Ince, F.L.C., F.C.S.

Demonstrations and lectures are given throughout the session on Tuesdays, Thursdays, and Fridays at 5 o'clock P.M.

Fees.—One course, 2*l.* 2*s.*; an entire session—two courses, 3*l.* 3*s.*

The North British Branch of the Pharmaceutical Society has a good museum which students who go to Edinburgh should visit, but there is no school there in connection with the Society. Mr. Hill, the Assistant Secretary, 36 York Place, Edinburgh, will give information regarding classes in the University and Colleges to which pharmaceutical students are admitted.

WESTMINSTER COLLEGE OF CHEMISTRY AND PHARMACY.

Trinity Square, S.E.

This well-known and popular school has been the means of placing on the Pharmaceutical Register the names of over 2,000 students, and annually continues to swell the roll. The principals are Messrs. Wills and Wootton, and the only student who need fail after attending the course of lectures at this school is one who "Wootton" work under any circumstances.

For the Minor 250 lectures in all are given on the six subjects of study, the student putting in two hours daily at practical chemistry, Saturdays excepted.

The Major course comprises 130 lectures, and three hours daily, except Saturdays, at practical chemistry.

Fees.—For Minor or Major, six weeks (one course), 6*l.* 6*d.*; fourteen weeks, 9*l.* 9*s.*; or 15*l.* 15*s.* for a year's instruction, sufficient for Minor and Major. A class for the Preliminary, fee 1*l.* 1*s.* per month, meets daily from 10 to 12, and there are also evening classes for the Preliminary and Minor.

Those who cannot attend a school of pharmacy will find "Wills's Universal Postal System" train them in the way they should go.

SOUTH LONDON SCHOOL OF PHARMACY.

225, Kennington Road, S.E.

Although established sixteen years after the Society's school, the South London stands next to it in antiquity. There are few parts of the globe at the present day which does not contain a "Muter's-man" to bear testimony to the excellence of the teaching imparted in Kennington Road. Dr. John Muter, M.A., F.C.S., &c., is the principal, and is also the author of the series of text-books used at the school.

The following is the course of study:—

Chemistry and Physics.—Sixty lectures and class examinations; fee, 3*l.* 3*s.*

Laboratory instruction in chemistry is given at the rate of 3*l.* 3*s.* per month for the junior and 4*l.* 4*s.* for the senior, with a reduction of 1*l.* 1*s.* per month if three months be taken.

Materia Medica.—Thirty lectures and class examinations; fee, 2*l.* 2*s.*

Botany.—Thirty lectures and class examinations; fee, 2*l.* 2*s.*

There are elementary and advanced classes in each of the above subjects, one course for Minor and the other for Major students.

Pharmacy.—Fifty lessons, with practical instruction, for one term, three hours per week; fee, 1*l.* 11*s.* 6*d.*

Prescription Latin.—Thirty lessons, 1*l.* 1*s.*

Compounding Fees.—The fees may be paid in one sum on entry, viz.: Junior Division (Minor), three months, 10*l.* 10*s.*; five months, 14*l.* 14*s.* Senior Division (Major), three months, 12*l.* 12*s.*; five months, 18*l.* 18*s.* The secretary, Mr. W. Baxter, will give fuller information.

THE CENTRAL SCHOOL OF CHEMISTRY AND PHARMACY.

173 Marylebone Road, N.W.

Principal:—*Mr. J. Woodland, F.L.S., F.C.S., &c.*

The work of the session is divided into three complete courses of lectures and classes. Four or five classes a day are held for Minor students, and generally three classes for the Major. *Fees.*—For one month, 4*l.* 4*s.*, with a considerable reduction for longer periods.

THE PRIVATE SCHOOL OF PHARMACY.

6 Rochester Square, Camden Road, N.W.

Mr. James W. Saunders (from the Royal School of Mines) reads with gentlemen, either privately or by correspondence, in all subjects required for the Major, Minor, and all Preliminary examinations; also for the medical examinations. Students can enter at any time, as each is taught and works separately.

VICTORIA UNIVERSITY.

THE OWENS COLLEGE, MANCHESTER.

Pharmaceutical Department.

The course for the pharmaceutical examinations extends over two years, and comprises chemistry (theoretical and practical), botany, *materia medica*, pharmaceutical chemistry, and pharmacy and dispensing. The day classes in botany, chemistry, and *materia medica* are the ordinary ones of the college. The evening classes are taught by Drs. Bailey and Cohen (chemistry), Professor Williamson (botany), Professor Leech (*materia medica*), and Mr. W. Elborne (pharmaceutical chemistry, pharmacy, and dispensing). The fees for a two-years course of evening classes (inclusive of chemical laboratory practice in the first year's, but exclusive of pharmaceutical laboratory work) come to 14*l.* 14*s.* Full particulars may be had on application to the Registrar, Mr. H. W. Holder, M.A.

THE MANCHESTER COLLEGE OF CHEMISTRY AND PHARMACY.

225 and 227A Oxford Street, Manchester.

Director:—*Mr. Spencer Turner.*

"Consilio et Lahore" is Mr. Turner's motto, and an excellent one it is, judging by the success which has attended the school since its transfer to Manchester in 1882. Mr. Turner, whose fame is extending southwards, is an efficient tutor, an enthusiastic chemist and botanist, and the most courteous of gentlemen. The system of tuition adopted at this college is "classes, no lectures," and each student becomes a subject of personal solicitude.

Fees.—For the Preliminary (six hours per week) 1*l.* 1*s.* a month, or six months 5*l.* 5*s.* For the Minor there are three sets of classes: (1) Full time, 3*l.* 3*s.* per month; (2) afternoon, on Tuesdays and Thursdays, 4 to 6 o'clock, and two hours a week practical chemistry, 8*l.* 8*s.* for twelve months; (3) evening, held Mondays, Wednesdays and Fridays, 8 to 10 o'clock, 1*l.* 1*s.* per month or 8*l.* 8*s.* a year. Major examination.—Two sets of classes, full time and evening, 2*l.* 2*s.* and 15*s.* per month respectively.

In the list of books used by students we notice that in the dispensary the "Manual of Dispensing," compiled by THE CHEMIST AND DRUGGIST, is employed. We think we have seen the book—in fact, we have frequent inquiries for it, which we trust to satisfy soon.

LIVERPOOL SCHOOL OF PHARMACY.

36 Oxford Street, Liverpool.

This school has developed wonderfully since its establishment in 1882. Mr. John S. Ward, the principal, is responsible for having assisted to a considerable extent in swelling the list of qualified chemists. The instruction which he imparts is not only good for the examination-room, but for the counter long afterwards. For the Minor examination 180 lectures are delivered during each term, two hours practical chemistry daily, and one afternoon a week devoted to dispensing. Fee, 8*l.* 10*s.* per term (3½ months). Classes are also held for the Major and Preliminary, fee for the former being the same as for the Minor, and for the latter, 2*l.* 2*s.* a quarter. The school is recognised and recommended by the Liverpool Chemists' Association.

TULLY'S POSTAL SYSTEM.

Mr. John Tully, M.S.C.I., "Hill's prizeman," of 185 St. George's Road, West Hill, Hastings, has been successful in preparing students through the post. His system resolves itself into three sets of lessons—No. 1 is for Preliminary students, and Mr. Tully is so confident of the success of his system, that, should a pupil fail, he will continue to teach him six months for nothing; No. 2 set is intended for students under twenty years of age, and should be of great value during apprenticeship; No. 3 series contains the serious requirements of the Minor. In all the sets questions are put at regular intervals, and the answers are to be submitted to the tutor. If the answers are not satisfactory they are returned to the student, and continue to be returned to him "Tully" can do them properly.

LEICESTER AND LEICESTERSHIRE CHEMISTS' ASSOCIATION.

St. George's Chambers, Greyfriars, Leicester.

The arrangements for the winter session are not yet completed, but the secretary informs us that they will be similar to last year's. The subjects taught will be materia medica, the pharmacy and the chemistry of the B.P., and practical chemistry. The lectures, &c., will be given in the rooms of the Association, which are always open to members for private study. A Preliminary class will be conducted by Mr. Knowles. The fees are low. All particulars may be had on application to Mr. J. J. Edwards, The Newarke, Leicester.

MIDLAND COUNTIES CHEMISTS' ASSOCIATION.

This association will resume teaching for the Preliminary, Minor, and Major examinations on October 3, the classes being held at the Educational Chambers, 90 New Street, Birmingham. The Preliminary class is taught by Mr. Stokes Dewson (fee, 3*l.* 3*s.*), and he, in conjunction with Messrs. F. H. Alcock and G. E. Perry, lecture on Minor subjects. (Dispensing will only be taught if a sufficient number of students come forward.) The fees are 1*l.* 10*s.* each subject, or 3*l.* 10*s.* for the whole. A class for the Major will be formed if a sufficient number give in their names to the honorary secretaries, Mr. Charles Thompson, 159 Stratford Road, and Mr. F. H. Alcock, F.C.S., 9 Broad Street Corner, Birmingham, either of whom will send fuller particulars.

NORTH OF ENGLAND PHARMACEUTICAL ASSOCIATION.

St. Nicholas Chambers, Amen Corner, Newcastle upon-Tyne.

The third session of the School of Pharmacy will be resumed at the beginning of October. The subjects taught are:—Pharmacy (Mr. B. S. Proctor), materia medica (Mr. N. H. Martin), chemistry and physics (Professor P. P. Bedson), and botany (Mr. C. E. Stuart). Professor Bedson's class meets in the lecture-theatre of the Durham College of Science on Friday mornings, the others in the Association's rooms in the evenings. Practical chemistry is taught. The instruction is thorough and well adapted to pharmaceutical requirements. Fee for each course of lectures, 1*l.* 1*s.*; for laboratory practice, 3*l.* 3*s.*; or 5*l.* 5*s.* for the whole, if paid in one sum. Copies of the syllabus can be obtained from the Honorary Secretary of the Association, Mr. Charles B. Ford.

SHEFFIELD.

Success still continues to crown the teaching in the School of Pharmacy of the Sheffield Pharmaceutical and Chemical Society. The teachers are Messrs. S. T. Rhoden (chemistry), C. O. Morrison (practical chemistry), G. A. Grierson (botany), and J. Humphrey (materia medica). The classes meet in the evenings, and a compound fee of 2*l.* 2*s.* admits to all. Application for admission to the school, or for further information, should be made to the honorary secretaries, G. A. Grierson, 74 Market Place, and J. Humphrey, 77 West Street, Sheffield.

UNIVERSITY COLLEGE, NOTTINGHAM.

Classes have been arranged in conference with the Nottingham and Notts Chemists' Association, which Association enables its members to enter at considerably reduced fees. The subjects included in the course are:—

1. Pharmaceutical chemistry; lectures and laboratory work. Professor Clowes, D.Sc.

2. Pharmaceutical botany; lectures and class-work. Professor Blake, M.A.

3. Materia medica; demonstrated lectures. Mr. C. Haydon White, M.R.C.S.

4. Practical dispensing; demonstrations. Mr. F. R. Sargeant.

The course of instruction entails work for three winter sessions in the college, and during the session 1887-88 the courses on chemistry and materia medica will be given. The course on chemistry includes twenty-two experimentally-illustrated evening lectures, and three hours' laboratory work in the day-time; fee, 1*l.* 1*s.* The tuition in materia medica will be given in about twenty evening lectures, illustrated by specimens; fee, 15*s.* The secretary of the college is Mr. P. H. Stevenson, F.S.A.

UNIVERSITY COLLEGE, LIVERPOOL.

Evening lectures on chemistry are given by Professor Campbell Brown, D.Sc.

ABERDEEN AND NORTH OF SCOTLAND SOCIETY OF CHEMISTS AND DRUGGISTS,

Bridge Street, Aberdeen.

The above Association has succeeded in making arrangements for evening classes at the Robert Gordon College, to meet the requirements of pharmaceutical students, the Association's laboratory being at the disposal of the students for practical work. Mr. A. Strachan, pharmaceutical chemist, Aberdeen, will supply further information.

EDINBURGH.

The modern Athens prides herself on having a staple industry distinct from that of any city in the kingdom—Education. But we hear little on this side of the Border regarding pharmaceutical schools. Dr. Drinkwater, 41 Chambers Street, assisted by one or more lecturers, conducts classes for the Minor and Major. The subjects taught are botany, chemistry, and materia medica. Dr. Drinkwater is an expert chemist, and he has excellent facilities for training students. Evening classes are also held, and instruction is given by correspondence. At the Royal Dispensary, West Richmond Street, tutorial classes (day and evening) are conducted by Mr. W. Duncan, Ph.C., the apothecary of the institution, who has trained a large number of good men in his short career as a teacher. The School of Medicine, Marshall Street, Nicholson Square, has a pharmaceutical section, which is under the management of Mr. R. Urquhart, secretary, assisted by competent specialists in the different departments. The Heriot-Watt College, whose new building is not yet completed, is likely to come "as a boon and a blessing" to Edinburgh. The evening lectures on chemistry by Professor W. H. Perkin, Jun., Ph.D., and those on botany by Mr. Patrick Geddes will no doubt be appreciated by pharmaceutical students. Physics will be taught by the principal, Mr. Grant Ogilvie. The fees are uniformly low. The college hopes to commence work in October, and the temporary office is at 5 South College Street.

APOTHECARIES' HALL ASSISTANTS' QUALIFICATION, LONDON.

Every candidate intending to offer himself for examination must give seven days' notice previous to the day of examination, and must at the same time deposit the fee, 2*l.* 2*s.*, at the office of the beadle, where attendance is given daily, Saturdays excepted, from 10 to 4 o'clock.

The following alterations have recently been effected:—Instead of every Thursday, the Court of Examiners now meet on the *third Thursday of each month*, and instead of re-examination being free, a further fee of 1*l.* 1*s.* is now required.

The examination is considerably easier than the Minor, although in botany the distinguishing characters are expected to be given of the following natural orders:—Compositæ, convolvulacæ, cruciferae, cucurbitacæ, filices, gentianacæ, graminacæ, labiatae, leguminosæ, liliacæ, melanthaceæ, papaveracæ, ranunculacæ, rosacæ, rutacæ, scrophulariacæ, solanacæ, and umbelliferae. The other subjects of the examination are:—Translation of physicians' prescriptions, the British Pharmacopœia, pharmacy, pharma-

ceutical chemistry, materia medica, and medical botany. Anyone who happens to study in London should certainly try to get through this examination. Communications are to be addressed to Dr. T. Peregrine, Secretary to the Court of Examiners, Apothecaries' Hall, Water Lane, E.C.

THE HONOURS AND SUBSTANTIALITIES OF PHARMACY.

The honours of pharmacy are few, and as the bestowal of most of them is in the hands of the Pharmaceutical Council, chemists and druggists as a class have been excluded within recent years from competing for prizes.

Jacob Bell Memorial Scholarships.—Two of these are awarded annually to those persons who have passed the Preliminary examination, become attached to the Pharmaceutical Society, and behaved best in an examination in Latin, English, arithmetic, elementary chemistry, pharmacy, botany, and French or German. The successful men get a year's free education in the School of Pharmacy, a set of textbooks from Mr. T. H. Hills, and 30% to assist in keeping them in London. Those who are eligible and smart should endeavour to get one of these scholarships. There are few who have hitherto held them who have not distinguished themselves in pharmacy or science.

The Redwood Scholarship only exists on paper in the meantime.

Honours for Pharmaceutical Chemists.—Those who pass the Major examination in the twelve months preceding July 1 of any year, and who when they passed were associates of the Pharmaceutical Society, are eligible to compete for prizes. The examination is held in July, and comprises the subjects of the Major examination, but somewhat more advanced, and a fair knowledge of current pharmaceutical literature is of benefit, more especially those subjects in materia medica and chemistry which have been particularly prominent. The first prize is considered to be the blue riband of pharmacy. The awards are:—

First Prize.—Pereira medal in silver, and books value 5*l.* or thereabouts.

Second Prize.—The Pharmaceutical Society's medal in silver, and books value 3*l.* or thereabouts.

Third Prize.—The Pharmaceutical Society's medal in bronze, and books value about 2*l.*

The books are given by Mr. T. H. Hills in memory of Jacob Bell. The Pharmaceutical Society also offer prizes for herbaria of indigenous plants.

PROSPECTS OF REGISTERED MEN.

Is the glory achieved worth the powder and shot expended upon it? is the question which will present itself to the mind of the young gentleman who has been enrolled on the Pharmaceutical Register, and we trust, for the sake of his future prospects, that he will feel inclined to answer himself in the affirmative. The insensate craving after the ideal does not confer happiness, and the grumbler is rarely a successful man. The student, after his course of study and acquisition of his certificate, is too often disposed to feel a *tedium vite* with the routine of the shop, the dispensary, or the laboratory. The duties of pharmacists are at times monotonous—granted—but what calling includes not monotony?

In these days of over-population there are few vocations in which prospects are uncloudedly roseate, and the future of the chemist and druggist may present as fair a vista as most others. For those who have not the means or inclination to struggle with "the fickle dame" in a pharmacy of their own there are, besides the openings as chemists' assistants and hospital dispensers, appointments sometimes in the naval hospitals at home and abroad.

In the openings for chemists' assistants the state of supply and demand seems to be pretty equally balanced. The salaries indoors average about 30% to 40% a year for juniors, and 60% to 70% for seniors. There are exceptions in both directions, but the instances are rare in which salaries reach 90% or 100% indoors, or 150% outdoors.

In hospitals the salaries range from about 80% or 100% per annum; but if the right man happens to get the right place, his stipend may be considerably added to by fees from students for tuition in pharmacy and dispensing. In several of the large London hospitals the salaries are much higher, but the appointments are filled by exceptional men. Appointments in hospitals are somewhat sought after, on

account of the easy hours; but a man must not go to those places to learn "style," for, to use an expressive, if not strictly elegant, phrase, "the dispensing is done anyhow." In the pharmacy the average time for dispensing an ordinary prescription is from ten to twenty minutes; but in the hospital an assistant when "charging for the golden lilies," in other words, "on the war path," reckons to dispose of one prescription a minute. In the larger hospitals many compounds are kept ready prepared in casks, and the patients' bottles are filled out of them. We do not wish to be understood as inferring that hospital dispensing is carelessly executed, or that the medicines supplied are unreliable; we simply desire to point the moral that a hospital is not the place to acquire elegance of manipulation or neatness of habits.

The dispensers in Her Majesty's royal naval hospitals are, if not exorbitantly, at least decently remunerated. The following is the official scale:—

			Per day
			s. d.
Under 5 years' service	..	..	5 0
" 8 "	..	..	5 6
" 11 "	..	..	6 0
" 14 "	..	..	6 6
" 17 "	..	..	7 6
" 20 "	..	..	8 6

And for each additional year of service after twenty years 6*d.* a day extra, until the maximum of 10*s.* per diem is reached. In addition to the above dispensers are provided with quarters and allowed 6*d.* a day in lieu of fuel and lights; moreover the charge of stores (only granted to Major men) involves an additional allowance at Haslar and at Plymouth hospitals of 2*s.* a day; at any other hospital at home or abroad, 1*s.* a day.

The Right Honourable the Lords of the Admiralty, recognising the increased cost of living abroad, grant a further allowance to officers serving at stations at Malta and the Cape of Good Hope of 2*s.* a day, at Jamaica and Bermuda of 3*s.* a day, and at Hong Kong of 4*s.* a day.

Those desirous of appointment (whose age must not be less than twenty or more than twenty-five) must make written application to the Director-General of the Medical Department of the Navy, and as vacancies occur they will be ordered to attend at his office at the Admiralty. The requirements from candidates are:—(1) They must be in good health; (2) of good character; (3) and possess either the Minor or Major qualifications of the "Pharmaceutical Association of Great Britain," the Major men having preference and precedence.

Dispensers are included in the list of salaried officers, with all the advantages pertaining thereto, and are entitled to superannuation under the Act of Parliament of 1859. Twenty-eight days' annual leave, exclusive of Sundays, are allowed to all officers; those serving abroad may reserve if from year to year so as to obtain a lengthened period of absence, such reserved leave not in any case to exceed six calendar months. Dispensing in the army is done by army men, generally sergeants of the Hospital Corps who have qualified themselves as chemists and druggists.

IRELAND.

The pharmaceutical chemists of Ireland date their political existence from 1875. Previous to that year the dispensing of prescriptions was confined to licentiates of the Apothecaries' Hall, Ireland.

The Pharmacy Act (Ireland) 1875 conferred a charter on a Pharmaceutical Society of Ireland, and entrusted it with the administration of the Act, with power to register chemists and druggists and pharmaceutical chemists, to examine candidates for registration, and to prosecute for offences against the Act. The Irish Society decided to make "Pharmaceutical Chemists" the only title, and that decision appears to be not altogether the best that could have been arrived at.

There is a Preliminary examination which, in addition to the subjects required in the British examination, includes the rudiments of chemistry and botany. Candidates must not be under the age of sixteen years, and certain examinations are accepted in lieu of it. The fee is 2*l.* 2*s.*, and the examination, partly oral and partly written, is held in Dublin four times a year.

Candidates for the higher examination who have not, pre-

vicious to January 1, 1884, passed the Preliminary, are required to produce a certificate of having been for four years practically engaged in compounding and dispensing in an "open shop"; and those whose Preliminary certificates are not of anterior date to 1879 must exhibit a certificate setting forth that they have attended a course of practical chemistry of not less than three months' duration in the laboratory of a school approved by the Council. The examination, which is only accessible twelve months after success in the Preliminary, or two years after passing a substituted examination, is a trifle more difficult than the British Minor on account of the requirements in volumetric analysis. Mr. Ferrall, Registrar, 11 Harcourt Street, Dublin, will give any additional information.

In Ireland the opportunities for attending the South Kensington Science and Art Classes are very numerous, perhaps exceeding those in England.

SCIENTIFIC EDUCATION.

THE object of this article is to give, in as few words as possible, a few hints to those who would devote themselves to a career more strictly scientific than the exercise of pharmacy permits.

Subsidised Education.—The Science and Art Department offers great facilities for achievements in this direction, their lectures and method of teaching being usually of a very high order. At each of the centres any or all of the sciences are taught, provided a sufficient number of students present themselves. Each subject is divided into three grades—elementary, advanced, and honours—first and second class certificates being awarded in each, and prizes in the advanced and honours stages. The fees are in all cases merely nominal, on account of the State allowances to tutors of from 1*l.* to 4*l.* (according to grade) for each man who passes. The grants, however, are only made on account of persons whose financial and social position, or whose parents' positions in the case of youths, are not of too elevated a character. The examinations are held in May of each year, and those who have attended the classes are examined without fee; others (except in the subjects of practical chemistry and metallurgy) may present themselves by giving notice before March 25, and paying a fee of 2*s.* 6*d.* for each subject. Local exhibitions of the value of 50*l.* (25*l.* Government grant, and 25*l.* raised by local subscription) are offered in connection with these examinations to enable students to complete their education at some college or school where scientific instruction of an advanced character may be obtained. In State schools all fees are remitted in such cases. Seven Royal Exhibitions, of the value of 50*l.*, tenable for three years, are given in competition each May—four to the Normal School of Science and Royal School of Mines (London), and three to the Royal College of Science for Ireland. Twelve National Scholarships are also annually to be competed for, entitling the holder to free instruction for three years at either the Normal School of Science and Royal School of Mines, or at the Royal College of Science in Ireland, with a maintenance allowance of 30*s.* a week during the session. The National Scholarships are open to the industrial classes only.

In addition to the above, six free studentships at the Normal School of Science are awarded annually, which confer on the winners free admission to the lectures and laboratories, and to instruction during the course for the associateship (about three years), but not to any maintenance or travelling allowance. Fuller information may be found in the Science Directory (6*d.*), to be obtained from the Secretary, Science and Art Department, South Kensington.

The Whitworth Scholarships are of the value of 200*l.*, 150*l.*, and 100*l.*, are competed for annually in May, and are open to anyone who is under 26 years of age, who has been engaged in handicraft in the workshop of a mechanical engineer for at least three years, and has spent at least six consecutive months in each of those years at the vice and lathe, or the forge, or the bench (twelve months at least to be spent at the vice and lathe). The competition is in the following subjects:—Practical geometry, machine drawing, building construction, naval architecture, mathematics, theoretical mechanics, applied mechanics, sound, light and heat, magnetism and electricity, inorganic chemistry, metallurgy,

steam, freehand drawing. The optional subjects are the second, third, and fourth. No candidate can obtain a scholarship who has not passed in the second stage, or "honours," of practical geometry, and in the second or third stage, or the "honours" of those stages, of mathematics, and obtained a first-class in the first stage, or passed in the second stage, or "honours," of theoretical mechanics, and obtained a "good" in freehand drawing. Proficiency in handicraft power is a *sine quâ non*. The Whitworth prospectus, price 3*d.*, is obtainable from the Secretary, Science and Art Department, South Kensington, S.W.

DEGREES AND TITLES.

The chief universities conferring degrees in sciences are those of London, Edinburgh, Glasgow, St. Andrews, Durham, and the Victoria University at Manchester and Liverpool.

B.Sc. & D.Sc.

All the universities conferring these degrees require a matriculation examination of varying degrees of severity.

University of London.—The degrees obtained at this university are held in higher esteem than those of any other examining body, which fact is due, no doubt, to the high standard of excellence required in all the examinations. We would draw particular attention to the changes in the matriculation examination which are to come into force in June, 1888. The changes considerably simplify it, and are in effect (1) to require a knowledge of *one* instead of *two* languages, in addition to Latin and English; (2) to reduce the number of papers by one; (3) to give a separate paper on mechanics; and (4) to give a choice between heat and light, magnetism and electricity, and chemistry. The subjects at present stand:—Latin, English, arithmetic, algebra, four books of Euclid, mechanics, *one* of the following languages: Greek, French, German, Sanskrit, Arabic; and either heat and light, magnetism and electricity or chemistry. The examinations take place every January and June, several valuable scholarships being offered. Fee, 2*l.* The intermediate examination is held each July. Candidates must have matriculated at least twelve months previously unless they have obtained honours, in which case they may present themselves in six months. The subjects comprise inorganic chemistry (including practical testing), experimental physics, pure mathematics, mixed mathematics, and general biology; fee, 5*l.* The final examination for the degree of B.Sc. is held in October of each year. A year must have elapsed since the success in the intermediate, and the candidate may elect to be examined in any three of the following subjects:—Pure mathematics, mixed mathematics, experimental physics, chemistry, botany, zoology, animal physiology, physical geography and geology, and mental and moral science. Fee, 5*l.* After being two years a B.Sc., the transmission of a thesis, and the undergoing of any reasonable test which the examiners choose to apply in the one branch of science chosen, will qualify the candidate for the honourable degree of D.Sc. Fee, 10*l.*

University of Edinburgh.—The matriculation is not so difficult as in London. Besides the differences in the examination requirements, the following are the chief points to be noted in connection with this university:—The attendance on science classes for the degree of B.Sc. must extend over three academic years, one of which must be spent at the Edinburgh University, and the other two either at it or at schools approved by it. The degree of D.Sc. may be taken *one* year after the B.Sc. Fees: Matriculation, 1*l.* 1*s.* 1*d.* B.Sc., 2*l.* 2*s.*; 2nd B.Sc., 2*l.* 2*s.*; D.Sc., 5*l.* 5*s.*, all exclusive of class fees.

The examination for this degree may be taken as typical of those for which attendance at lectures is required. A young pharmacist who recently passed the first stage successfully sends us the examination paper (chemistry, botany, and natural history). The questions in the first two subjects could easily be answered by a Major man, and the questions in natural history are comparatively elementary in character. Besides the written examination, "there is," remarks our correspondent, "a practical chemistry examination in which the candidate gets three solutions, such as manganous sulphate, potassium iodide, barium nitrate, and one solid, either soluble in water or of such a nature that hydrochloric acid will give a reaction

leading to its detection. One hour is allowed for this. Two ounces of the solutions and about half a watchglassful of solid are supplied. The candidate is expected to write down all the reactions (1) for the base and (2) for the acid.

"The oral examinations are expected to take up ten minutes for each subject, but the fact is that the whole three subjects occupy not more than ten minutes. In an oral examination in chemistry and botany the candidate is questioned on his paper, and if he is weak on any point in it, he is wise who has thoroughly overcome his weakness when he appears before his examiner. Besides this, he may be shown a piece of marble, fluor-spar, granite, &c., and be asked its composition. One plant belonging to one of twenty-nine prescribed natural orders is shown, and if the candidate fails to 'spot' the order he stands a poor chance of passing in botany. The oral in natural history is rather more difficult, for the reason that skulls and skeletons of certain prescribed animals have to be recognised, and the more important bones pointed out. In addition the candidate has to recognise the more important structures in a freshly-dissected cod, skate, leech, worm, pigeon, rabbit, mussel, or frog.

"On the whole the examination is very fairly conducted, although the students often assert that unless one takes out the professor's extra classes there is little chance of passing; but I did not take out any extra classes and yet I passed at the first trial. If one passes in two subjects it is credited to him, but failure in two subjects means failure in all three." Of course a second professional examination of a non-stringent character follows.

The University of Glasgow grants the degree of B.Sc. only, and attendance at the college is compulsory. Several valuable scholarships are attached to this department. Fee for the final, 3*l.* 3*s.*

The degrees of both Doctor and Bachelor of Science are conferred by the University of St. Andrews. Twelve months is in this case also the interval between the struggle for the B.Sc. and the trial for the D.Sc. Attendance at the university or a sister one is a *sine qua non*.

The Victoria University (Owens College, Manchester, and University College, Liverpool) grants the B.Sc. only. Three years' curriculum is required, except in the case of those who have achieved first division distinction in the Preliminary, when the first year's certificates of attendance are not required. Fees: First year, 18*l.* 4*s.*; second, 21*l.*; third, 20*l.*

In the Durham College of Science, two years, each year consisting of three terms, is necessary to acquire the academical rank of Associate in Physical Science, for which the fees are low. After a lapse of one year presentation may be made for the degree of B.Sc. Fee, 2*l.* 2*s.* On admission to the degree 4*l.* is paid to the University of Durham.

F. I. C.

Incorporated by Act of Parliament in 1877, the Institut of Chemistry of Great Britain was established to provide for the due qualification of consulting and analytical chemists. In order to become connected with the Institute it is necessary to have passed satisfactorily through a course of three years' study of theoretical and analytical chemistry, physics, and elementary mathematics at some university or institution approved by the Council, and to have attained the age of twenty-one. A list of approved institutions may be obtained from the Secretary, Somerset House Terrace, London, W.C. To become an Associate the aspirant is required to be successful in an examination (extending over four days) in qualitative and quantitative analysis, including gas analysis. Fee, 2*l.* 2*s.* The following are the centres at which the examinations are held:—

Examiners		
Birmingham	W. A. TILDEN, D.Sc., F.R.S.	
Bristol	W. RAMSAY, Ph.D.	
Dublin	W. N. HARTLEY, F.R.S.	
Glasgow	E. J. MILLS, D.Sc., F.R.S.	
London	CHARLES GRAHAM, D.Sc.	
Manchester	WATSON SMITH.	

To become a Fellow the Council requires that the candidate shall have been admitted as an Associate, and that since his admission, and for a period of three years therefrom, he shall have been continuously engaged in the study and practice of applied chemistry.

F. C. S.

No examination is required; the election takes place by ballot. Candidates for the Fellowship have to submit a written statement of their qualifications, signed by five Fellows (the more notable the better). The Society's rooms are at Burlington House, Piccadilly, W.

WHERE TO GET SCIENTIFIC EDUCATION.

THE CITY AND GUILDS OF LONDON INSTITUTE FOR THE ADVANCEMENT OF TECHNICAL EDUCATION.

There are three institutions under the auspices of the above—viz. the Technical College, Finsbury; the Central Institution, Exhibition Road, S.W.; and the South London Technical Art School, 122 and 124 Kennington Park Road, S.E.

The Technical College, Finsbury, divides its operations into two portions:—Day classes for those who are able to devote one, two, or three years to systematic technical education; and evening classes for those who desire to receive supplementary instruction in the application of science and of art to their trades and manufactures.

The College embraces the following departments:—(1) Mechanical engineering and applied mathematics; (2) Electrical engineering and applied physics; (3) Industrial and technical chemistry; (4) Applied art; (5) the building trades. Applicants for admission must not be less than fourteen years of age, and are required to produce a certificate of good conduct from their former teacher, or other testimony of good moral character.

Day students before being admitted are required to pass an elementary examination in mathematics, and must possess a fair knowledge of English. The requirements in mathematics include arithmetic, algebra, including simple equations and problems involving simple equations, and geometry (second book of Euclid). The next examination for the admission of students will take place at ten o'clock on Thursday, September 29, and the names of students admitted will be posted up at the College on October 1. The work of the session will commence on Tuesday, October 4, at 9.30 A.M., when all students will be expected to be in their places.

An intermediate examination is held at the end of each term, and at the close of the session an examination is held in the work of the college, and on the results of the examination and of the work of the session in class, laboratory, and workshop prizes are given. Students who fail to qualify for the second year's course are directed to repeat the first year's.

Certificates of attendance are supplied to students who have regularly attended the complete course of instruction in any one department, or qualified themselves in the laboratory or workshop. Various scholarships are awarded on the results of the entrance examination.

The staff of tutors includes Professor J. Parry, M.E., D.Sc., F.R.S. (mathematics and mechanics); Professor S. P. Thompson, D.Sc., B.A. (electrical engineering and applied physics); Professor R. Mendola, F.R.S., F.I.C. (chemistry); and Mr. A. F. Brophy, head-master (applied art).

Fees.—The fee for day students for a complete course of instruction for the session is 9*l.*, paid in advance, or 10*l.* if paid in three instalments. These fees (in special cases reduced or remitted) include attendance at all the lectures, laboratory and workshop courses, in the department which the student enters, and the use of all apparatus and materials.

The Central Institution gives the highest technical education, and the courses of instruction are especially arranged to enable students to qualify as:—(1) Technical teachers; (2) mechanical, civil, electrical, and chemical engineers; (3) principals, superintendents, and managers of chemical and other manufacturing works. The instruction includes engineering, chemistry, physics, mechanics, mathematics, drawing, manufacturing technology, workshop practice, and modern languages. An entrance examination in pure and applied mathematics, mechanical drawing, physics, and French or German must be passed. The next examination will be held on September 27, and the three succeeding days. Various valuable scholarships are awarded on the result of the entrance examination.

Fees.—About 1*l.* 10*s.* per annum for a complete course of instruction. There are several scholarships, of which particulars may be had on application to the Principal.

Throughout the country in various centres the Institute has arranged technological examinations in various subjects, amongst which are the following, which chemists are likely to undertake:—(1) Alkali and allied branches—(a) Salt manufacture; (b) Alkali manufacture; (c) Soap manufacture; (3) (a) Brewing; (b) Spirit manufacture; (4) Coal-tar distilling; (5) Sugar manufacture; (7) Oils, colours, and varnishes, manufactures of; (8) Oils and fats, including candle manufacture; (17) Photography; (18) Electro-metallurgy; (31) Ores, raising and preparation of.

The examinations are in two grades—I., Ordinary; II., Honours; and are held in May.

The following prizes are awarded in each subject:—

Honours Grade	1st prize, 5 <i>l.</i> and a Silver Medal
	2nd " 5 <i>l.</i> " Bronze "
Ordinary Grade	1st prize, 3 <i>l.</i> and a Silver Medal
	2nd " 3 <i>l.</i> " Bronze "
	3rd " 2 <i>l.</i> " " "
	4th " 1 <i>l.</i> " " "
	5th " a Bronze Medal

A programme of the Institute may be obtained at the Central Institution, or at Gresham College, E.C.

THE NORMAL SCHOOL OF SCIENCE AND ROYAL SCHOOL OF MINES.

South Kensington.

The excellence of the teaching at this institution is proverbial. The affiliated schools are collectively familiarly known as the School of Mines, and although primarily intended for the instruction of teachers and of students of the industrial classes selected by competition in the examinations of the Science and Art Department, other students are admitted on the payment of fees fixed at a scale sufficiently high to prevent undue competition with institutions which do not receive State aid. The aim of the school is first to give a thorough training in the general principles of science and afterwards advanced instruction in one or more special branches of science. The course of instruction lasts for three years, and the Associateship of the Normal School of Science is given in one or more of the following divisions:—(1) Mechanics; (2) physics; (3) chemistry; (4) biology; (5) geology; (6) agriculture; while the Associateship of the Royal School of Mines must be obtained in metallurgy or mining.

At present the number of applications for admission to the school is considerably in excess of the accommodation which the school can afford, and consequently it has become necessary to adopt a process of selection, particulars of which may be obtained from the registrar. The scholarships, to which we have already drawn attention, are numerous and well worth winning.

UNIVERSITY COLLEGE, LONDON.

The course of study at this college is specially designed to meet the requirements of the London University examinations. The professors are all men who have acquired special eminence in their respective departments—Professor J. A. Fleming, M.A., D.Sc. (electrical technology); Professor W. Ramsay, Ph.D. (chemistry); and Professor D. Oliver, F.R.S., F.L.S. (botany), being among the number. The fees for the course of lectures vary from 2*l.* 2*s.* to 9*l.* 9*s.* The fees for instruction in the chemical laboratory and in the physical laboratory are 26*l.* 5*s.* and 17*l.* 17*s.* respectively, for the session. An unusually large number of valuable scholarships and prizes are open to competition.

KING'S COLLEGE, LONDON.

The course of instruction pursued at this college is also well adapted to students who wish to graduate at the University of London. Two scholarships of 15*l.* each, and two of 10*l.*, in the department of engineering and applied science, will be given on the results of the entrance examination to be held on the 5th proximo. The whole course occupies three years.

Evening classes are held in mathematics, mechanics, physiology, botany, experimental and applied physics, mineralogy and geology, comparative anatomy, and practical

biology, metallurgy, and other subjects. Fees for evening classes, 10*s.* 6*d.* to 1*l.* 1*s.* per term.

POLYTECHNIC INSTITUTE.

309 Regent's Street, W.

This school is typical of those conducted under the South Kensington system. The chemistry, botany, and pharmaceutical Preliminary classes are well suited for metropolitan chemists' assistants who can only take evening classes. There are five classes in theoretical chemistry (two of them advanced) and six for practical work, each meeting once a week. Organic chemistry is also taught, the teacher in both departments being Mr. R. Avey Ward. The fee to non-members for elementary theoretical is 5*s.*, and for practical work, 15*s.* per session. Full detailed syllabus may be obtained on application to the secretary, price 2*d.* An introductory meeting, open to all intending students, will be held on Friday, September 30, at 8 P.M.

UNIVERSITY COLLEGE OF WALES, ABERYSTWTH.

The courses of instruction are arranged to meet the requirements for degrees in arts and sciences (including the Preliminary scientific examination for degrees in medicine) of the University of London, and for scholarship examinations at Oxford and Cambridge. The fee for the whole session, paid in advance, is 10*l.*; or 10*l.* 10*s.* paid in certain instalments at the beginning of each term. The fees per term for practical chemistry, practical physics, and practical biology are exceedingly moderate.

THE MASON SCIENCE COLLEGE, BIRMINGHAM.

This college has acquired a well-earned reputation in the Midlands. Students over sixteen years of age are admitted without examination, but under that age candidates for admission are required to pass a preliminary examination in arithmetic, algebra, geometry, grammar and dictation, and a *viva-voce* examination in either Greek, Latin, French, or German. The examination is not difficult. Students are prepared for graduation in science at the London University. The following scholarships and prizes are awarded: (a) Two entrance scholarships, value 25*l.* each, tenable for one year; (b) two scholarships for students of one year's standing, tenable during the second year, value 30*l.* each; (c) two scholarships, value 30*l.* each, for two-year-old students, tenable during third year; (d) prizes connected with the examinations of the University of London; and (e) two technical scholarships of 30*l.* each, tenable for one year.

Evening classes are a feature.

UNIVERSITY COLLEGE, BRISTOL.

Students of both sexes having left school may here continue their studies in science, languages, history, literature, and especially in science applied to the arts and manufactures. The subjects taught at the college include chemistry, mathematics, mechanics, experimental physics, electro-technics, engineering, botany, and geology.

QUEEN'S COLLEGE, CORK.

The charter of the college prescribes that it shall be "for all students in all such courses of education and branches of knowledge as may be pursued in the colleges of any university in our United Kingdom of Great Britain and Ireland." The college, accordingly, embraces the faculties of arts, law, and medicine, and the School of Engineering. In these divisions the students may be either matriculated or non-matriculated. In the Faculty of Arts it is open to students to proceed to the degrees of B.A., M.A., D.Lit., and D.Sc. in the Royal University of Ireland, and of B.A., M.A., D.Lit., B.Sc., and D.Sc. in the University of London.

UNIVERSITY COLLEGE, DUNDEE.

No student is admitted to the day classes under the age of fifteen, while those under sixteen years of age are required to pass a somewhat easy entrance examination. The courses in this college afford students an opportunity of preparing for the matriculation examinations, and the intermediate examinations in arts; and the college hopes shortly to offer a complete course for the degree of B.A., as well as that of B.Sc. The University of St. Andrews has recognised the science curriculum as qualifying, without any condition of

residence at the university, for the degrees of B.Sc. and D.Sc. The botany and chemistry lectures are suitable for pharmaceutical students. Several scholarships are open for competition, and numerous evening classes are held.

ROYAL COLLEGE OF SCIENCE FOR IRELAND.

Dublin.

This institution supplies a complete course of instruction in science applicable to the industrial arts, especially those which may be classed broadly under the heads of mining, engineering, and manufactures, and is intended also to aid in the instruction of teachers for the local schools of science. Students may enter as associates or non-associates. By "associate-students" is meant all who enter for the three years' curriculum of the college, and these latter may, under certain conditions, obtain the diploma of associate of the college. Many associates of the college have obtained appointments of great honour and emolument throughout the country. Complete courses of instruction are given in the appended subjects: Applied mathematics and mechanism; descriptive geometry; mechanical drawing, engineering, and surveying; experimental physics; chemistry; geology; demonstrations on palæontology; mining, and mineralogy; zoology, botany, elementary biology. The fees are 2*l.* for each course, or 10*l.* for all the courses of each year, with the exceptions of laboratory practice and drawing. The fees for laboratory practice are: chemistry, 12*l.* per session; physics, 6*l.* per session; and biology, 2*l.* each term.

ANDERSON'S COLLEGE, GLASGOW.

This, one of the best technical schools in the kingdom affords instruction (in both day and evening classes) in, physics, chemistry, applied mechanics, mechanical drawing, and mathematics in the Faculty of Arts. Courses of lectures on technical chemistry are given in connection with the City and Guilds of London Institute for the Advancement of Technical Education.

THE YORKSHIRE COLLEGE, LEEDS.

Moderate fees and a sound education characterise the Yorkshire College, which was in particular established to provide instruction in such science and arts as are applicable or auxiliary to the manufacturing, mining, engineering, and agricultural industries of the city of York, and in ancient and modern languages, history and literature, medicine, surgery, law, logic, and moral philosophy. Students (day) over fourteen and under sixteen are required before admission to pass an examination similar to the preliminary of the Mason College, Birmingham. Several scholarships are annually competed for, and the college prepares many students for graduation in the London University. Our Northern cousins are particularly favoured in the matter of evening classes held at this college.

OWENS COLLEGE, MANCHESTER, AND UNIVERSITY COLLEGE, LIVERPOOL.

We have already drawn attention to these admirable centres of education in our prefatory remarks on Scientific Degrees.

The courses of study at the colleges meet the requirements not only of those preparing for the degrees of the Victoria and London Universities, and of the Universities of Cambridge and Oxford, but also of those who desire the diplomas of the Royal Colleges of Physicians and of Surgeons of England, and of the Society of Apothecaries. Certain of the lectures are also suitable to candidates preparing for home Civil Service, Indian Civil Service, the Military Colleges of Woolwich and Sandhurst, Cambridge Higher Local Examinations, and the Oxford Examination for Women.

THE DURHAM COLLEGE OF SCIENCE, NEWCASTLE-UPON-TYNE.

This college is the only channel through which the degrees and diplomas in science and engineering of the University of Durham can be obtained. The students of the college may be matriculated students of the University of Durham who purpose taking a degree in science in that university, or they may be students of the Durham College only. Students of the former class are expected to attend a definite course of instruction extending over two years, and embracing mathe-

matics and mechanics, physics, chemistry, geology, natural history, French, German, and mechanical drawing, and to pass periodic examinations in the subjects of their lectures. Students who have not matriculated may attend any course of lectures or laboratory instruction they desire, and may present themselves for the corresponding examination or not, as they prefer. Students who are well up in mathematics may join the senior classes at once. The full course of lectures meets the requirements of the Institute of Chemistry. Evening classes are held.

UNIVERSITY COLLEGE, NOTTINGHAM.

Students at this well-known college, who for three sessions have received at least four hours' weekly tuition in the college, and have satisfactorily passed the examinations connected with this institution, are entitled to Oxford and Cambridge affiliation certificates. During the period they must have passed two examinations conducted by university examiners, viz., the first examination in arithmetic, Euclid I.-III., algebra to quadratics, and one language; the second examination, either in languages, mathematics, natural science, or English. The instruction at this college is well adapted to would-be graduates in science at the London University, whether they have matriculated or not.

FIRTH COLLEGE AND SHEFFIELD TECHNICAL SCHOOL SHEFFIELD.

This institution forms one of the series of local university colleges which have been formed chiefly within the last decade, to spread the advantages of university education throughout the provinces in order to develop talent and direct genius. The doors of the Firth College are open to all persons over seventeen years of age. Advanced mathematics, physics, chemistry, biology, &c., form the lecturers' topics during the day classes, while elementary education in the same is given in the evening. The fees are moderate.

MEDICAL EDUCATION AND EXAMINATIONS.

THE MEDICAL PROFESSION.

A MAN from whom we expected better—a medical man—only a week or two ago, at a meeting of the British Medical Association, found cause to dwell upon the degeneration of urban dwellers in particular and the depreciation of mankind in general. Such statements from anyone are bad—from a medical man worse—from Dr. Fothergill to the British Medical Association, they savour of a sweet confidence in the credulity of man which passeth all understanding. Could we consider the learned doctor in serious mood we might refer him to the oft-quoted mummy and the ancient suit of armour, with the obvious deductions.

Pessimism is an undesirable quality, and so is ultra-optimism, but it is no indulgence in the latter to say that the state of man at the present time is mentally, morally, and physically as great as when Hannibal slew his 40,000 Romans or Diomedes distinguished himself round the walls of Troy. Chivalry and heroism are not now exemplified by gratifying the tastes of brutal kings or vanity-puffed ladies, in the barbarism of the tournament, as conducted during the middle ages; they exist in a loftier sense and more fully merit the titles, and there is no avocation which calls forth those qualities so fully as the medical profession. To their honour be it said that the response is full and free. Simple deeds of heroism are daily performed among the rank and file of "the doctors" which perhaps have never any further reward than a blessing from dying lips, and at times not even that. Those who are not fully prepared for the exercise of self-abnegation and really hard work had better keep out of the medical profession, as should they also who have dreams of retiring early with a "pile" to the banks of the cerulean Danube or other poetic resort. The doctor's income is better than a druggist's, but he has more calls upon it, a professional position to keep up, more dinner parties to give, and the consequence is, we read often of "the poor doctor," seldom of the "needy chemist." But youth as a rule thinks more of glory than of guineas, and it is youth after all that

leavens life. And there are glories to be achieved in the practice of medicine—in the student days and in after-life. The glories of the student days are somewhat mixed; Tom Sawyer's pranks are not altogether extinct, but the real glories naturally only fall to the few. There is this comfort to the many—that it is not always the brilliant man at the hospital that makes the great practitioner, and the determined heart need never despair of success. "In the bright lexicon of youth," &c. The first step towards the medical profession is the

PRELIMINARY EXAMINATION AND REGISTRATION AS A MEDICAL STUDENT.

The General Medical Council has ruled:—That every person desirous of being registered as a medical student shall apply to the branch registrar of the division of the United Kingdom in which he is residing, and shall produce or forward to the branch registrar a certificate of his having passed a preliminary examination as required by the General Medical Council, and *evidence that he has commenced medical study*. The commencement of professional study is not reckoned as dating earlier than fifteen days before the date of registration. The subjects which must be passed (at one or more examinations) are:—English language, grammar, and composition; Latin grammar, translations from specified authors, and translation of easy passages not taken from such authors; arithmetic, to vulgar and decimal fractions; first book of Euclid; elementary mechanics of solids and fluids, comprising the elements of statics, dynamics, and hydrostatics; and *one of the following*:—Greek, French, German, Italian, any other modern language, logic, botany, zoology, elementary chemistry. Mr. W. J. C. Millar, B.A., 299 Oxford Street, London, W., is the registrar for England; Mr. J. Robertson, 4 Lindsay Place, George IV. Bridge, Edinburgh, for Scotland; and Dr. Heard, 35 Dawson Street, Dublin, for Ireland; from whom all particulars may be obtained.

The following is a list of examinations held in Great Britain and Ireland, which are recognised by the General Medical Council as fulfilling the above conditions so far as regards preliminary education, provided that in such examinations the necessary subjects indicated above have been taken by the candidate:—

University of London.—Matriculation examination.

University of Oxford.—Responsions. Moderations. Local examinations (junior and senior).

University of Cambridge.—Previous examination. Local examinations (junior, senior, and higher). Oxford and Cambridge schools examination board.

University of Durham.—Examinations for students at end of first year, and for certificate of proficiency.

Universities of Edinburgh, Glasgow, Aberdeen, and St. Andrews.—Preliminary examination for graduation in science, medicine, or surgery. Local examinations (junior or senior certificate). Examination for degree in arts.

University of Dublin.—Entrance examination. General examination, at end of senior Freshman year. Examination for degree in arts.

Queen's University in Ireland.—Local examinations for men and women. Entrance or matriculation examination. Previous examination for B.A. degree. Examination for degree in arts.

Royal University of Ireland.—Matriculation examination.

Victoria University.—Entrance in arts examination. Preliminary examination.

Royal College of Surgeons of England.—Examination conducted under the superintendence of the college by the examiners of the College of Preceptors.

Royal College of Preceptors.—Examination for a first or second class certificate (1st or 2nd division).

Society of Apothecaries of London.—Examination in arts.

Royal Colleges of Physicians and Surgeons, Edinburgh.—Preliminary examination.

Faculty of Physicians and Surgeons of Glasgow.—Preliminary examination.

Royal College of Surgeons in Ireland.—Preliminary examination.

Queen's College, Belfast, Cork, or Galway.—Matriculation examination.

Intermediate Education Board of Ireland.—Junior, middle, or senior grade examination.

St. David's College, Lampeter.—Responsions.

Educational Institution of Scotland.—Preliminary medical examination.

Particulars of foreign and colonial universities and colleges which are recognised may be had from the registrars.

HOW TO BECOME A "DOCTOR."

As is well known, the only practitioner of medicine whose medical degree strictly entitles him to the prefix "doctor" is the M.D. But custom, whose observances are more binding than the decrees of senates, has declared that the mere legal writer of prescriptions must be distinguished by the title "doctor." Even chemists are frequently dubbed, in a slightly developed mode, "docthor." We will assume, in the first instance, that the registered aspirant to medical honours wishes to become an

M. D.

of the University of London, and in such a case he will have to pass three examinations before obtaining his degree. The best course for the student is to matriculate in June, and devote the next year at any of the recognised schools to the courses on physics, chemistry, and biology in order to present himself in the July of the following year for the Preliminary scientific (M.B.) examination. This examination is held every January and July, but it is only at the latter date that an honours examination is held. If he passes this examination in July, he may commence his medical examination in October, and for the next two academic years must conduct his studies as follows:—Two winter sessions at dissection, a course on practical pharmaceutical chemistry, some attention to practical pharmacy and to courses of lectures on three of the following subjects (one course on each):—Descriptive and surgical anatomy, histology and physiology, pathological anatomy, materia medica and pharmacy, general pathology, general therapeutics, forensic medicine, hygiene, obstetric medicine and diseases peculiar to women and infants, surgery, medicine. Having testimony that he had fulfilled this requirement, he may present himself for the Intermediate M.B. examination in anatomy, physiology, histology, materia medica and pharmaceutical chemistry, and organic chemistry. Having succeeded, let us assume, in passing the Preliminary scientific (M.B.) examination in July, 1888, and the Intermediate M.B. examination in July, 1890, the would-be graduate must wait a little over two years—viz. until November, 1892—before he may attempt his Final M.B. examination. This examination comprises the following subjects:—General pathology, general therapeutics and hygiene, surgery, medicine, obstetric medicine, forensic medicine, and questions in surgical and medical anatomy, pathological anatomy, and pathological chemistry.

The examination for the M.D. degree takes place once a year. Candidates must be M.B.'s, and since they graduated as such have attended (1) to clinical or practical medicine during two years in a hospital or medical institution recognised by the University; or (2) to clinical or practical medicine during one year in a hospital or medical institution recognised by the university, and of having been engaged during three years in the practice of their profession; or (3) of having been engaged during five years in the practice of their profession, either before or after taking the M.B. degree. The regulations are modified in the case of those who have passed with honours. Fee for each examination is 5*l*.

The London University degrees in medicine are the only ones open to students who attend London schools. They are deservedly the most highly valued, for they are the most difficult to get, and a very small percentage of those who are annually added to the medical register succeed in acquiring the coveted titles. It is rather anomalous that every medical practitioner should not be able to call himself Dr. Blank, and therefore there are two movements on foot at present for getting degrees for London students in a more easy fashion than the London University allows.

OXFORD AND CAMBRIDGE MEDICAL DEGREES.

Oxford.—The candidate having graduated as B.A. must put in three years' residence, during which period he must pass two examinations in order to qualify as M.B. The sub-

cts of the first examination are organic chemistry, human anatomy, and physiology; and for the second examination, medicine, surgery, midwifery, pathology, forensic medicine, and materia medica and pharmacy. The subjects of organic chemistry and materia medica and pharmacy may be taken separately. Having practised as M.B. for some time, and delivered himself safely and satisfactorily of a thesis, he may have conferred on him the coveted title of Medicinæ Doctor.

Cambridge.—The professional examinations for the M.B. degree are three in number. Three years after graduation as M.B., under regulations similar to those which obtain at Oxford the M.D. may be taken. Degrees are also granted in surgery.

The following universities also confer the M.D. degree:—University of Edinburgh, Royal University of Ireland, University of Durham, Victoria University (Manchester), University of Glasgow, University of Aberdeen, University of St. Andrews, University of Dublin. In most cases the intermediate degree of M.B. is taken, the M.D. being the result of a thesis submitted several years after leaving the alma mater. The Scotch universities manufacture the bulk of "doctors" (M.B.'s are so entitled by courtesy). The process takes four years' residence, with three, and in some cases four, professional examinations. Medicine is not taught in its entirety at St. Andrews, the degree of that university being a convenient shelter for college men of twenty years' standing. The title C.M. (Master of Chirurgery) generally goes along with M.B.

IRISH DEGREES.

Both the University of Dublin (Trinity College) and the Royal University of Dublin grant degrees in medicine and surgery, and licences to practise are granted by the King's and Queen's Colleges of Physicians, the Royal College of Surgeons, and the Apothecaries' Hall of Ireland. The periods and subjects of instruction for the M.B., Dublin University, are of the ordinary character, and the education may be obtained at any college in Dublin recognised by the university. Fees for the diploma, 16*l*. After three years' practice the M.B. may present a thesis, pay 13*l*. of fees and receive the degree of M.D. To become a graduate in surgery of this university it is necessary to be a bachelor of arts and of medicine, and pass an examination. The university also grants licences in medicine and surgery. The examinations for the M.B. degree, Royal University of Ireland, are three in number. The higher degree may be taken two years afterwards, the candidate being subjected to a bedside examination, and he must submit a thesis. The university also grants a diploma in sanitary science, and degrees in surgery and obstetric practice. The colleges subject candidates to four examinations before they grant their licence, and the total amount of fees is 40 guineas. The Apothecaries' Hall is at present making arrangements with the Royal College of Surgeons (Ireland) for a conjoint examination.

L. R. C. P., LONDON.

The L.R.C.P., Lond., qualifies the holder to practise in surgery as well as medicine. The curriculum must extend over at least forty-five months. Three professional examinations must be passed. The subjects of the first examination are:—Chemistry, light and heat, electricity, materia medica and pharmacy, and osteology. The second examination is in anatomy and physiology. The subjects of the final examination comprise:—Medical anatomy and pathology, including morbid anatomy; the principles and practice of medicine; surgical anatomy and pathology, including morbid anatomy; the principles and practice of surgery; midwifery, and diseases peculiar to women; forensic medicine; and public health and therapeutics. Candidates who have already passed examinations in surgery satisfactory to the college are exempted from re-examination on surgical anatomy and on the principles and practice of surgery.

M. R. C. S. LONDON.

For this qualification the professional examination is divided into two parts—the First or Primary examination, and the Second or Pass examination. The First or Primary, which cannot be passed until after the student's second

winter session, embraces anatomy and physiology, and is partly written and partly demonstrative on the recently dissected subject, and on prepared parts of the human body. To the Pass or Surgical examination candidates are not admitted until after the completion of their fourth year of professional education. The examination, which is partly *viva voce* and partly written, entails a knowledge of surgical anatomy and the principles and practice of surgery, medicine, midwifery, the practical use of surgical apparatus, and the practical examination of patients. The fee of 5*l*. 5*s*. is payable prior to admission to the Primary examination, but this amount is allowed as part of the whole fee, 22*l*., payable for the diploma.

THE DOUBLE QUALIFICATION.

The Royal Colleges of Physicians and Surgeons of Edinburgh, and Faculty of Physicians and Surgeons of Glasgow, have made arrangements whereby the student in one series of examinations may obtain the diplomas of the three examining bodies. Forty-five months after registration as a student is the shortest time in which candidates may acquire this qualification. Three professional examinations have to be undergone. The First examination, which cannot be taken until the end of the first year, comprises chemistry, practical chemistry, elementary anatomy, and histology. Fee, 5*l*. 5*s*. The Second examination may be attempted at the end of the second year of study, and embraces anatomy, physiology, materia medica, and pharmacy. The Final examination, taken after the full period of study, includes the principles and practice of medicine (including therapeutics, medical anatomy, and pathology), clinical medicine, the principles and practice of surgery (including surgical anatomy, operative surgery, and surgical pathology), clinical surgery, midwifery (including gynaecology), medical jurisprudence, and hygiene. Unlike the Final examination of the London Royal College of Physicians, candidates are not exempted in any of the subjects, though some of them may have formed part of examinations passed before other boards. There are also arrangements between the London colleges for granting the double diploma.

L. S. A.

This qualification is yearly acquiring greater favour. The examinations to be passed for the licence are two, the Primary and Final, each being written, oral, and practical. Two years' medical study subsequent to registration as a medical student must be gone through before presentation for the Primary examination, which requires an efficiency in general and practical chemistry, materia medica, prescriptions and dispensing, anatomy and physiology (including dissections and demonstrations), and histology with demonstrations.

The final examination cannot be passed until the expiry of the four-years course, and is divided into two parts. Part one includes surgical anatomy, surgical pathology, surgical instruments and appliances, and a clinical examination of surgical cases, and part two obstetric instruments and appliances, microscopic examination of morbid structure, and a clinical examination of medical cases. Either of the parts may be taken first.

Fees.—For the primary, 4*l*. 4*s*.; for the final, 6*l*. 6*s*.

COST OF THE MEDICAL CURRICULUM.

While many of our readers will require, few can object to, an estimation of the probable cost of the "licence to kill." The perpetual student's fee at St. George's Hospital, for example, is 125*l*. paid in advance, or 130*l*. paid in yearly instalments. In the case of students who have already attended chemistry and materia medica, 10*l*. 10*s*. is deducted from the above amount. The necessary "extras," including practical chemistry and pharmacy, subjects for dissection (two courses), and operative surgery, will amount to 15*l*. 15*s*. Total for fees, 140*l*. 15*s*.

The sinews of war will be further exercised in supplying the equipments for the warfare, which comprise a microscope, ophthalmoscope, stethoscope, dissecting case, pocket case, three or four thermometers, case of catheters, and a set of bones, costing in all about 20*l*. Books constitute an additional item, say 10*l*.

To the young Englishman with German habits the cost of board, lodging, and clothes could possibly be covered by

60% per annum, but the student should remember that a healthy mind is rarely the occupant of a starved and poorly-clad body. We thus arrive at a total of 380% 15s. This total may be made smaller and beautifully less if the student is clever enough, and *fortunate* enough, to win any of the numerous

SCHOLARSHIPS,

to some of which, perhaps, it would not be inappropriate to draw attention. At St. Thomas's Hospital during the year 1887-8 there are offered for competition in physics, chemistry, and either botany or zoology, at the candidate's option, two entrance scholarships of the value of 125% and 60% respectively, and sixteen other scholarships, varying in value from 10% to 42%. At St. Bartholomew's there are two entrance scholarships, each of the value of 130%, two of 50%, and one of 20%. At Guy's two entrance scholarships—one in science, the other in arts—125 guineas each. At St. Mary's one entrance scholarship in natural science, value 100 guineas, and three others, 50 guineas each. At the London Hospital and Medical College two entrance scholarships in natural science, value 60% and 40% respectively, and various others, varying in value from 20% to 35%. At St. George's, two entrance scholarships of 50% each. At the Middlesex Hospital two entrance scholarships, value respectively 100% and 60%.

In the above list we have only noted some of the scholarships attainable in London schools, but there are also numerous and valuable scholarships connected with the provincial centres. London, Edinburgh, and Dublin will always be the favourite centres for students on account of the superior hospital practice available and the consensus of great tutors gathered at these points.

MEDICAL SCHOOLS.

The following is a list of the schools in the metropolis and in the provinces whose courses of instruction are recognised by the various qualifying bodies:—

Anderson's College, Glasgow.—Fees for lectures and hospital practice, 48%.

Bristol Medical School:—Composition fee, 63% for the college, and for hospital medical and surgical practice, 36% 15s. The Bristol Royal Infirmary contains 264, and the General Hospital 154, beds.

Carmichael College of Medicine and Surgery, Aungier Street, Dublin.—Connected with several hospitals. Fee for the full course of lectures for the Royal College of Surgeons, Ireland, 58% 5s. 6d. Evening lectures on all subjects held.

Catholic University of Ireland. School of Medicine; Cecilia Street. Dame Street, Dublin.—Perpetual fee for lectures, 56% 17s. 6d.

Charing Cross Hospital—180 beds. Fees for matriculated students (students who enter for their whole course at the hospital), 94% 10s.

Dr. Steeven's Hospital and Medical College, Dublin.—The hospital contains 250 beds. Composition fee for the medical school, 56% 3s. 6d.; fee for hospital, 12% 12s. for nine months.

Guy's Hospital, St. Thomas's Street, Borough, S E—635 beds, 200 at present unoccupied for want of funds. Fee, 131% 5s.

King's College, Strand, London, W C.—Medical department; 220 beds in hospital. Fee, 126% 11s. 6d.

Leeds School of Medicine.—Composition fee: for lectures, 50% 8s.; for medical and surgical practice at the Leeds General Infirmary (320 beds), perpetual, 42%.

London Hospital, Mile End, E.—790 beds. Fees, 96 guineas in advance.

London School of Medicine for Women, Henrietta Street, Brunswick Square—Fee for lectures, 70%; for hospital practice (at the Royal Free Hospital, Gray's Inn Road), 20% the first year, 15% each succeeding year, or 45% in advance, or a perpetual ticket for a further fee of 6% 6s. Dean, Mrs. Garrett Anderson, M.D.

Middlesex Hospital Medical School.—305 beds. Composition fee, 100%.

McGill University, Montreal. Faculty of Medicine.—Total collegiate and hospital expenses, spread over four years, about 400 dollars.

Queen's College, Birmingham—Associated with the Mason Science College. Composition fee, 100 guineas. Students are admitted to two hospitals with 400 beds.

Queen's College, Cork.—Fees for lectures and hospital practice, about 47%.

Queen's College, Galway.—Minimum fee for the degree of M.D., 39% 5s. No hospital practice.

School of Medicine, Edinburgh.—Fee for study required for a double qualification, 100%, including fee for examination.

Sheffield School of Medicine.—Perpetual fee for lectures, 45%. Hospital practice at the General Infirmary (200 beds), or the Public Hospital and Dispensary (100 beds). Perpetual fee in each case, 36% 15s.

St. Bartholomew's Hospital, West Smithfield, E C.—750 beds. Fees for perpetual attendance on lectures and hospital practice, 136% 10s., or 131% 5s. in advance.

St. George's Hospital, Hyde Park Corner, S.W.—351 beds. Fee for the whole course, 125%.

St. Mary's Hospital, Cambridge Place, Paddington, W.—281 beds. Perpetual fee, 119 guineas in advance; for dental students, 55%.

St. Thomas's Hospital Medical School, Albert Embankment, Westminster Bridge.—572 beds. Perpetual fee, 125 guineas.

The Glasgow Royal Infirmary.—542 beds. Fees for the whole course, 48%.

The West London Hospital, Hammersmith.—100 beds. The fee for the complete course, including one year's hospital practice, is 26% 5s.

University College Hospital, Gower Street, London.—Composition fee, 125 guineas, or 130 guineas in instalments.

University College, Liverpool.—300 beds. The perpetual hospital fee is 42%; the composition fee for lectures is 63%.

University of Dublin School of Physic.—Fees, for obtaining degrees of M.B., B.Ch., and Master of Obstetric Science, are—Lectures, 63% 15s. 6d.; hospitals, 44% 2s.; degrees, 31%. Total, 138% 17s. 6d.

University of Durham College of Medicine, Newcastle-on-Tyne.—280 beds; composition fees for lectures, 60 guineas, or 70 and 75 guineas in instalments.

University of Glasgow Medical School.—Total minimum expenses for M.B. and C.M., 90%.

Victoria University (the Owens College), Manchester.—Composition fee of 63%. Hospital practice at the Royal Infirmary, with 298 beds; composition fee, 42%.

Westminster Hospital.—Upwards of 200 beds. Fee 100%.

REGISTRABLE QUALIFICATIONS.

The following are the various qualifications recognised as registrable by the General Medical Council:—

Fellow, Member, Licentiate, Extra Licentiate, of the Royal College of Physicians of London.

Fellow, Member, Licentiate, of the Royal College of Physicians of Edinburgh.

Fellow, Licentiate, Licentiate in Midwifery, of the King and Queen's College of Physicians of Ireland.

Fellow, Member, Licentiate in Midwifery, of the Royal College of Surgeons of England.

Fellow, Licentiate, of the Royal College of Surgeons of Edinburgh.

Fellow, Licentiate, of the Faculty of Physicians and Surgeons of Glasgow.

Fellow, Licentiate, Licentiate in Midwifery, of the Royal College of Surgeons in Ireland.

Licentiate of the Apothecaries' Society, London.

Licentiate of the Apothecaries' Hall of Dublin.

Doctor of Medicine, Bachelor of Medicine, Licentiate in Medicine, Bachelor of Surgery, Master of Surgery, or Licentiate of Surgery, of any university in the United Kingdom.

(Foreign and Colonial degrees. Some of these are recognised. Particulars may be had from the Registrar of the Medical Council.)

THE HOMŒOPATHIC SYSTEM OF MEDICINE.

It is not within the province of this article to discuss the respective merits of homœopathy and allopathy, but we feel justified in recommending each new graduate in medicine to inquire into homœopathy as scientifically practised before issuing his ukase against it. Perhaps the following of this advice will confirm the scoffer, or turn the sneer into a prayer; in either case we offer it.

The London Homœopathic Hospital, Great Ormond Street, Bloomsbury, provides a course of lectures on homœopathic practice, intended for qualified medical men as well as students. Composition fee for the entire course, 10*l.* 10*s.*, or subjects may be taken separately.

DENTAL EDUCATION.

CHEMISTS AND DENTISTS.

THERE are probably no two occupations more suitable for affiliation than those of pharmacy and dentistry. The trained pharmacist makes a better dentist, and the dentist generally makes a wealthier chemist. Although the title of dentist is now protected by law, yet any of the operations which he performs may be done by the unqualified. The chemist may put in his window a tablet with the device "Teeth extracted," and may wrestle with the stubborn molar, try conclusions with the obstinate bicuspid, or stop the perforated incisor, to his heart's content; in short, may enjoy all the rights and privileges of dentists (except suing for fees, and being exempt from jury service) as long as he does not call himself one. There may be a grim satisfaction in the mere knowledge of this to the chemist who is not a dentist, when he reflects on the encroachments by the unqualified in his own legitimate calling. Chemists and others who practised dentistry before August 1, 1878, or were apprenticed to dental practitioners before August 1, 1875, having enjoyed their title to register, became afflicted with a desire for a dental diploma, and to gratify these the

L. D. S. sine curriculo

was instituted for a time. After December 31, 1883, the *sine curriculo* examination will be discontinued by the Edinburgh College, except to candidates who have presented themselves for such examinations previous to that date. The examination, with the exception of the exemptions in favour of registered medical practitioners, is in all respects the same as that for other candidates, and confers the same privileges. It is partly written and partly oral. The written examination comprises general anatomy and physiology, and general pathology and surgery, with especial reference to the practice of the dental profession. The oral practical examination embraces anatomy and physiology, and pathology and surgery, and the use of preparations, casts, drawings, &c. Examinations are held in June and October. Fee for the diploma, 10*l.* 10*s.*

THE CURRICULUM FOR THE L. D. S.

Before commencing his professional education the student must pass a Preliminary examination in arts—either the matriculation of the University of London, or one of the several examinations recognised by the General Medical Council as fulfilling the conditions required by that body as regards preliminary education.

The professional education of the dental student consists of apprenticeship, or instruction in mechanical dentistry, for a period of not less than three years; attendance on lectures, &c., at a general hospital and medical school for one summer and two winter sessions, *i.e.*, eighteen months; also, attendance at a dental hospital and school for two years. The attendance at the hospitals and schools may be, and generally

is, carried on simultaneously and completed in two years. The education must be extended over four years after registration as a student. The Royal College of Surgeons of England and the Royal College of Surgeons of Edinburgh recognise the three years of instruction after registration as a student, whether in the form of serving articles, or apprenticeship to mechanical dentistry, as professional education. The Faculty of Physicians and Surgeons of Glasgow recognises one year's apprenticeship after registration only as one of the four years of professional study. Fee and examination as above.

THE TRIPLE QUALIFICATION.

L. D. S., M. R. C. S., AND L. R. C. P.

The recent changes brought about by the amalgamation of the two London colleges instead of having, as was anticipated, increased the difficulty of obtaining these higher qualifications, has in reality simplified the curriculum.

During the mechanical apprenticeship, eighteen months of which is recognised by the College of Surgeons when taken previous to the Preliminary examination, the student can receive instructions (from any registered medical practitioner, pharmaceutical chemist, at a public hospital, infirmary, or dispensary) in chemistry, including chemical physics, practical chemistry, pharmacy, and materia medica; and after the Preliminary examination has been passed, he should register as both a dental and medical student, and present himself for examination in those subjects before entering a hospital (or if he prefers it, he may postpone the two latter subjects until the second examination), then enter simultaneously at a general and dental hospital. At the termination of his first winter session he may pass in elementary anatomy and physiology, and at the end of his second winter the same subjects more advanced.

Having attended for two years the general and dental hospitals he may present himself for the dental licence, and if lucky enough to pass, the next two years must be devoted to surgery, medicine, midwifery, &c., and the candidate can then present certificates entitling him to undergo the *experimentum crucis*—the final test of the two colleges.

D. D. S.

This is an American degree, and any licentiate in dental surgery or registered dentist who wishes to perfect himself in gold stopping, or has a penchant for handles to his name may at very little expense and trouble acquire this degree. To the L. D. S. especially is the matter easy. He, with three months at his disposal and about 100*l.* in his pocket, may proceed to Baltimore, U.S.A., and return home at the end of his holiday with the Doctor of Dental Surgery diploma in his pocket. The experience gained is well worth the expense. and the British L. D. S., who is also a D. D. S., may rank himself amongst the most highly qualified of his profession.

L. D. S., IRELAND.

The Royal College of Surgeons of Ireland grants this diploma. Candidates are required to pass a preliminary and three professional examinations. Total fees about 17*l.* 17*s.*

SCHOOLS OF DENTISTRY.

Metropolitan.

The Dental Hospital of London and the London School of Dental Surgery, Leicester Square, W. Founded at another address in 1859. Dean, Mr. Morton Smales, M.R.C.S., L.D.S., &c. Winter session commences October 5. A scholarship of the value of 20*l.*, and several prizes and certificates are awarded annually in July. Such subjects as chemistry and materia medica must be acquired outside the hospital, and are not included in the composition fee, 31*l.* 10*s.*; perpetual fee, 36*l.* 15*s.*

The National Dental Hospital, 149 Great Portland Street. Established 1861. Dean, Mr. Thomas Gaddes, L.D.S. Winter session commences October 3. Total fee for the special lecture and hospital practice required by the curriculum, 25*l.* 4*s.*; perpetual fee, 31*l.* 10*s.*

Provincial.

Birmingham Dental School, Dental Hospital and Dental Department of Queen's College.—Warden, the

Rev. W. H. Poulton, M.A. Fees: a composition fee of 60 guineas, payable in one or two sums, admits to the full curriculum required for the dental diploma (inclusive of the necessary hospital practice). If classes are taken out separately, 71*l*. 8*s*. Entrance fee, 3*l*. 3*s*.

Owens College and the Victoria Dental Hospital, Manchester.—Warden, Dr. Parsons Shaw. Fees for the necessary courses for qualification, together with the Infirmary and the Dental Hospital practice, 79*l*. 12*s*. 6*d*.

University College, Liverpool, and Liverpool Dental Hospital, Mount Pleasant.—Registrar, Mr. Frederick Rose. Fees, 52*l*. 10*s*. for lectures and demonstrations (medical and special), and for hospital practice, 23*l*. 2*s*., payable in two instalments if desired.

Edinburgh Dental Hospital and School, Chambers Street, Edinburgh.—Dean, Mr. Bowman Macleod, L.D.S., 16 George Square. Fees for two years: hospital practice, 15*l*. 15*s*.; for special classes, 9*l*. 15*s*.; for *all* subjects required for the licence and examination fees, 75*l*. 10*s*.

Glasgow Dental Hospital and School, 56 George Square, Glasgow.—Dean, Mr. J. R. Brownlee, L.D.S. Eng., 220 West George Street, Glasgow. Fees: two years' hospital practice, 12*l*. 12*s*.; for special lectures, 10*l*. 10*s*.; general hospital practice and lectures in non-dental subjects, 28*l*. 7*s*. to 37*l*. 16*s*. Minimum total, 51*l*. 9*s*., exclusive of professional examination fees.

Dental education may also be obtained at the following schools:—

Dental Dispensary and School, Octagon, Plymouth.—Hon. Secretary, Mr. E. G. Bennett. The fee for lectures and dispensary practice is 23*l*. 2*s*.

Dental Hospital of Exeter, Bedford Circus.—Hon. Secretary, Mr. Henry B. Mason. Under certain conditions pupils are taken. Fee, 5*l*. 5*s*. annually.

Dental Hospital of Ireland, York Street, Dublin.—Dean, Dr. Theodore Stack. Total fees for hospital practice and special lectures, 31*l*. 10*s*.

The general subjects and hospital practice may be taken at the following institutions:—

Bartholomew's Hospital, Smithfield, E.C.—Fee, 63 guineas.

Charing Cross Hospital, W.C.—The composition fee is 42*l*. 2*s*.

Guy's Hospital, Borough, S.E.—Fee, 63 guineas; practical chemistry, 1*l*. 10*s*. extra.

London Hospital, Mile End, E.—Fee, 42*l*.; practical chemistry, 2*l*. 2*s*. extra.

Middlesex Hospital, Berners Street, W.—Fee, 40 guineas, in one sum.

St. George's Hospital, Grosvenor Place, S.W.—Fees: first year, 30*l*.; second year, 25*l*.

St. Mary's Hospital, Paddington, W.—Fees: first year, 30*l*.; second year, 25*l*.

St. Thomas's Hospital, Albert Embankment, S.E.—Fee, 55*l*.

Westminster Hospital, Broad Sanctuary, S.W.—Fees: 50*l*.

University College, Gower Street, W.C.—The fee for subjects required at a general hospital by the dental curriculum is 60 guineas.

THE ARMY MEDICAL SERVICE.

An eminent Scotch professor in a recent address strongly advised students against entering the army medical service. His advice was based on the difficulties regarding relative rank. Nevertheless, many enter for this and the Indian and naval services. The following table shows what may be expected in pay and rank:—

Rank	Rates of Pay	Gratuities	Relative Military Rank
	Daily		
Surgeon on probation ..	£0 8 0	—	Lieutenant
	Annual		
Surgeon	£200 0 0	—	} Captain
" after 5 years' service ..	£250 0 0	—	
	Daily		
" " 10 " " ..	£0 15 0	£1,250	} Major
Surgeon-Major " " ..	1 0 0	—	
" after 15 years' service ..	1 2 6	1,800	
" " 18 " " ..	—	2,500	
		Half-pay	
" " 20 " " ..	£1 5 0	£1 0 0	Lieut.-Colonel
" " 25 " " ..	1 7 6	1 2 6	
" " 30 " " ..	—	1 5 0	
Brigade-Surgeon	1 10 0	—	} Lieut.-Colonel (but always senior to Sur- geon-Major)
" after 5 years in rank ..	1 13 0	—	
" " 20 years' service ..	—	1 7 6	
" " 30 " " ..	—	1 10 0	
Deputy Surgeon-General ..	2 0 0	1 15 0	Colonel
Surgeon-General	2 15 0	2 0 0	Major-General

Pay in the Royal Navy is somewhat better, and in the Indian medical service almost double.

THE VETERINARY PROFESSION.

THE veterinary profession, though incomparable with the medical profession in the length of its political history, probably boasts as great an antiquity, for Chiron—one of the half-man, half-horse inhabitants of Thessaly—was, we are asked to believe, the preceptor of Æsculapius himself. But, without bringing mythology to our aid, there is ample evidence that the diseases of animals were studied long before civilisation entrenched itself in Italy, or polytheism was established at Rome.

The noblest study of mankind may be man, but the study ranking next in the order of nobility is undoubtedly of those living things which a free conception of creative impulses has induced us to consider as ordained for our use. The veterinary surgeon has many opportunities not accorded to his fellows. To him is open the privilege of seeing in a defunct condition the historic but obstinate ass and the never-to-be-reasoned-with mule. To few are these ecstasies accorded. Sterne was probably the only author who ever treated of an ass's death, and even at the risk of being considered eccentric we confess an inability to fathom the pathos in his treatment of the subject. It seems so impossible to reconcile within a few sentences the connection between a dead ass, the Pyrenees mountains, a crust of bread, Heaven, and the small-pox that we half-anticipate pardon for only seeing bathos where pathos is designed.

HOW TO BECOME A VETERINARY SURGEON.

It is necessary that he who would adopt a profession should understand his prospects and prospective position. From an etymological point of view the word "veterinary" has exclusive reference to animals which bear or carry; while the word "farrier" strictly means a worker in iron—a shoer of horses. As the title "barber" about a century and a half ago could be freely translated as surgeon, so the farrier and veterinary surgeon were only a few years ago interchangeable titles. That is now changed. The Act of 1881 entitled certain farriers to term themselves veterinary surgeons; but the man who has acquired the latter title by examination is a very distinct being from the *soi disant* shoer of horses. To be a qualified veterinary surgeon nowadays entails a knowledge of all the diseases which affect the whole of our household animals—from the shrill midnight musician to the noblest of our beasts of burden.

The prospects of a veterinary surgeon are, as prospects go, brilliant; but the practice of his profession would probably be accompanied by more satisfactory results were his knowledge of drugs and therapeutics greater. Perhaps there is no better training for a veterinarian than an apprenticeship

to the drug trade, and many druggists' assistants of a "horsey" disposition, recognising this, enter the veterinary profession. The military veterinarian is the most enviable of mortals, for not only is his position elevated by rank, and his rank supported by suitable emoluments, but the emoluments are obtained by proverbially little trouble. He is supposed to examine the animals every day, but the examination consists, generally, in simply receiving a report from the chief farrier, his scientific services being called into requisition in extreme cases.

The veterinary student, after passing his Preliminary examination, for which the Pharmaceutical Preliminary is accepted (when passed within four years of registration as a veterinary student), must select his college and matriculate. We suppose that his choice is the Royal Veterinary College of London. Here the fees amount to 45 guineas, payable in three instalments, all in advance, as follows:—25 guineas on entry, 10 guineas at the end of his first period of study, and 10 guineas at the end of his second period of study. Each student, during his academical course, is subjected to three examinations before a board or court of examiners appointed by the Royal College of Veterinary Surgeons. At the first examination the candidate is examined on chemistry (general and practical), toxicology, materia medica, pharmacy, and botany. This examination is held after the close of the first term of the winter session.

At the end of the second term the second examination is held on the anatomy of the horse and other domesticated animals, histology, and physiology. The third or final examination exacts a knowledge of morbid anatomy and physiology, therapeutics, veterinary medicine and surgery, symptoms and treatment of diseases in general affecting the horse and other domestic animals. In addition to the above theoretical requirements, the candidate is questioned on the principles of shoeing, the writing of prescriptions, the dispensing of medicines, the examination of horses for soundness, and the writing of certificates relating thereto, and other practical details.

In Scotland the examination is the same, and is conducted by the same board. Scotland educates more students than England, having three colleges to England's one.

THE ROYAL VETERINARY COLLEGE, *Great College Street, Camden Town. N.*

Principal:—*Prof. W. Robertson.*
Secretary:—*Mr. R. A. N. Poyes.*

The scholastic department has been greatly increased, a pharmaceutical laboratory, &c., having been added. The infirmary contains accommodation for over 100 horses, besides cattle, sheep, dogs, and other animals. The infirmary and general practice of the college is conducted by Professors Robertson, Axe, and Penberthy. Fee, 45 guineas.

ROYAL (DICK'S) VETERINARY COLLEGE.

Clyde Street, Edinburgh.

Founded by the late Professor Dick in 1823, and endowed by him at his decease in 1866. Principal, Mr. Thomas Walley. Fee, 40 guineas, payable in advance or in three instalments.

THE NEW VETERINARY COLLEGE.

Leith Walk, Edinburgh.

Principal:—*Professor Williams.*

A gold medal, 20*l.*, or a cheque for that amount, is presented by the principal in April of each year to the student who has made the highest number of marks before the Board of the Royal College of Veterinary Surgeons in his first and second examinations. Fee, 45 guineas, payable in three instalments. The next session commences on Wednesday, October 5.

GLASGOW VETERINARY COLLEGE.

Buccleuch Street, Garnethill.

Professor McCall, principal of the college, will open the next session with an introductory address on October 5, at 3 o'clock P.M. The course of study extends over two years and a half. Fee for perpetual ticket, 45 guineas.

VETERINARY PROSPECTS IN THE ARMY.

We have already referred to the duties of the veterinary surgeon in the army, and it may be interesting to note the ranks and rates of pay of such officers.

Principal veterinary-surgeon (rank, colonel), 850*l.* a year, inclusive of all allowances. Inspecting veterinary-surgeon (rank, lieutenant-colonel), 25*s.* a day; after twenty years' service, 27*s.* a day; after thirty years' service, 30*s.* a day. Veterinary-surgeon of the first class (rank, lieutenant), 16*s.* a day; after five years' service (rank, captain), 18*s.* a day; after ten years' service (rank, major), 20*s.* a day; after thirty years' total service, 24*s.* a day.

THE ROYAL AGRICULTURAL COLLEGE AND FARM. *Cirencester.*

This college and farm was established in 1845 under the patronage of H.R.H. the late Prince Consort, for the purpose of affording a sound scientific and practical education in agriculture, dairy-farming, estate management, forestry, &c., and nobly fulfils its object. The farm is a fine mixed one of about 500 acres, of which 450 are arable, and the remainder pasture. Certificates of membership or associateship (M.R.A.C. or A.R.A.C.) are granted to those who have attended seven sessions, and passed a preliminary and a final examination. The final examination is in practical agriculture, agricultural chemistry, book-keeping, and any one other subject selected by the candidate from the following:—Natural history (geology, or botany, or zoology); physics (hydrostatics, hydraulics, pneumatics, heat, and meteorology; or mechanics, steam-engine, and meteorology); land surveying and engineering (including levelling); veterinary science (physiology, and pathology, including the physiology of parturition). The fees for in-students are 135*l.*, or 45*l.* per term; and for out-students, 75*l.*, or 25*l.* per term.

Personalities.

MR. T. S. ALDER, chemist, New Bridge Street, Newcastle, recently organised a seaside excursion for the poor children of the city. About 5,000 children and 1,000 adults enjoyed the outing, which was a great success.

A NEW MEDICAL KNIGHT.—Dr. Morell Mackenzie attended at Balmoral on Wednesday of last week, and was knighted by the Queen, in recognition of his services to the Crown Prince of Germany. The new knight is a graduate in medicine of the London University (M.B. 1861, and M.D. 1862). He very early identified himself with diseases of the throat and larynx, gaining the Jacksonian prize of 1863 with an essay on "The Pathology and Treatment of Diseases of the Larynx." His contributions to medical literature are most voluminous, and he has deservedly gained a world-wide reputation.

NEW COMPANIES.

THE CRUSTACEAN FERTILISER SYNDICATE (LIMITED).—Capital, 10,000*l.*, in 1*l.* shares. Object, to purchase from William Wingfield Bonnyng the exclusive right to a natural fertiliser, known as the Crustacean Fertiliser; also to manufacture and prepare all descriptions of fish and other manures and oils.

JOHANNIS NATURAL MINERAL WATER COMPANY (LIMITED).—Capital, 50,000*l.*, in shares of 1*l.* each. Object, to purchase from W. W. Rogers & Co. (Limited) the rights and interests in the Johannis Brunnen spring, and the lease thereof; the exclusive right to sell the Johannis Brunnen water in the United Kingdom of Great Britain and Ireland, the Australi colonies, British India, the West Indies, Central America, and the Empire of Russia, and to acquire the other business of the vendors, particularly in Germany. The first directors are Frederick Thorn, E. A. Miller, and G. F. Rogers, with a remuneration of 100*l.* per annum; the chairman 150*l.* An additional 50*l.* per annum will be given for every 1 per cent. dividend declared above 10 per cent. per annum on the paid-up capital of the company.

REGISTERED **"SANITAS"** TRADE MARK.
THE BEST DISINFECTANT
 FLUID, OIL, POWDER, SOAPS,
 TOILET & VETERINARY PREPARATIONS

For Trade Lists, Terms, &c., apply to
THE SANITAS CO., Ltd., Bethnal Green, LONDON, E.

NOTICE.

CHEMISTS having Special Positions (only) to Let for
 Advertisements in forthcoming PRICE LISTS and ALMANACKS
 are requested to quote for same to THE "SANITAS" COMPANY, LIM.,
 LETCHFORD'S BUILDINGS, BETHNAL GREEN, LONDON, Manu-
 facturers of the PATENT "SANITAS" DISINFECTING, TOILET, and
 VETERINARY PROPRIETARIES.

Friedrichshall.

THE WELL-KNOWN APERIENT MINERAL WATER.

IMPORTANT NOTICE.

By reason of an improved method of caption, by which dilution is avoided,
 FRIEDRICHSHALL WATER will be found now to be of CONSIDERABLY
 GREATER STRENGTH and EFFICACY than heretofore.

*The ordinary dose is a large wineglassful (4 ounces) taken fasting. Most
 efficacious and more acceptable to the palate when heated or mixed with an
 equal quantity of very hot water.*

"The most suitable aperient for prolonged use."

Professor SEEGEN.

Of all Chemists and Mineral Water Dealers. [2]

ELLIMAN'S UNIVERSAL EMBROCATION
 FOR—
 RHEUMATISM, LUMBAGO,
 SPRAINS, BRUISES, STIFFNESS,
 SORE THROAT FROM COLD,
 CHEST COLDS.
 The Safest. Quickest. most
 certain remedy.
 Prepared only by
 ELLIMAN, SONS & CO.
 SLOUGH, ENGLAND.

SILICATED CARBON

PATENT
 MOVABLE
 BLOCK

FILTERS.

SEE ADVERTISEMENT, PAGE 33.

SEE SEABURY & JOHNSON'S Advertisement of INDIA-
 RUBBER POROUS AND SPREAD PLASTERS on page 51.

WOODHALL SPA

BROMO IODINE MINERAL WATER.

The strongest known Iodine Water in the World.

This remarkable Spa has been purchased by a Syndicate of gentlemen who have
 determined to make more widely known the extraordinary curative powers of this
 spring, which contains more Iodine and Bromine than any spring in Europe—
 "And, we may safely add, in any part of the World."—Dr. Cuffe, for many years
 late resident Physician at Woodhall Spa.

An analysis of the water having been made in November, 1886, by Professor
 Wanklyn, M.R.C.S., corresponding member of the Royal Bavarian Academy of
 Sciences, Professor of Chemistry, a very important discovery has been made, viz.,
 the presence of Free or Elementary Iodine.
 Dr. Wanklyn says— "So far as I am aware, this is the first instance in which free
 Iodine has been found in appreciable quantity in a natural water. For many years
 the Woodhall Spa has been celebrated as a valuable remedy in skin diseases. The
 fact that it is a solution of free Iodine is interesting in this connection, and well
 worthy of the attention of the medical profession."

The Woodhall Bromo Iodine Water is now being bottled at the Spring by the
 Sole Agents, BROMLEY & CO., Chemists, 233 High Street, Lincoln, 5 & 6 The
 Grove, Buxton, and at Woodhall. All communications to be addressed to them at
 the Spa, Woodhall Horncastle.

A. M. TODD'S CRYSTAL WHITE DOUBLE REFINED OIL OF PEPPERMINT. See Advt. on page 37.

EDITORIAL NOTES.

EDUCATIONAL.

THE departure of summer weather leaves us once again
 within hail of another session, and according to custom this
 issue of THE CHEMIST AND DRUGGIST is largely devoted to
 educational matters. In pharmaceutical education there are
 no changes to record; the compulsory curriculum is silent
 for the winter, and while it hibernates voluntary training in
 the scientific subjects of the examinations will be more or less
 active. There has been so much said regarding fresh pro-
 vision for educating young chemists that some are apt to
 think that the existing facilities are woefully deficient. A
 glance at our list of purely pharmaceutical schools, and of
 others which are open to pharmaceutical students in the
 metropolis and the provinces, shows how little ground there
 is for the assumption. The truth is that we are abundantly
 supplied with teaching material. In the provinces especially,
 assistants and apprentices have many opportunities of laying
 a foundation in the scientific subjects pertaining to pharmacy.
 In several of the largest commercial centres the local associ-
 ations have provided classes, and judging from their results,
 the teachers are perfectly competent to perform their duties.
 It is the duty of every assistant and apprentice who has not
 passed the Minor examination to take advantage of these
 classes, and their employers should give them all en-
 couragement, by allowing time for attending the classes, and
 by inciting the backward youth to improve himself. Excel-
 lent educational inducements are provided in most towns
 and large villages, in what are now commonly known as the
 South Kensington classes. The objection is frequently urged
 against these that the teaching in chemistry and botany is
 quite out of the pharmaceutical lines. Science is too catholic
 to admit the objection. The education provided is of the most
 valuable character, for in the elementary stages a thorough
 knowledge of the fundamental principles is imparted, and
 that knowledge is of universal application and will always
 be useful to the student. Indeed, it is the very kind of
 knowledge in which pharmaceutical students show their
 deficiency in the examination rooms. If every chemist's
 apprentice would begin early and earnestly to study the
 sciences in their general application, his intelligence for
 future technical or pre-examination studies would be greatly
 sharpened. As a famous living writer has said, "Science is
 of great importance, because rational knowledge has an im-
 mense superiority over empirical knowledge. Not only is
 scientific culture requisite for each, that he may understand
 the *how* and the *why* of the things and processes with which
 he is concerned as maker or distributor; but it is often of
 much moment that he should understand the *how* and the
why of various other things and processes." To treat science
 as a business some regard with pious horror, but to the
 chemist and druggist science is essentially a business matter,
 and, considered as such, the acquirement of the knowledge
 should be gone about heartily and honestly. The six or
 twelve months' study immediately preceding examination
 may be and is regarded as preparing for examination, but it

by no means prepares the young man for his life's work. His education for that should begin from the first day that he stands behind the counter. For this reason we have always urged that the Preliminary examination should be passed before apprenticeship is entered upon. This view is now generally accepted, and pharmacists—even pharmaceutical councillors—are beginning to see that the solution of the education and examination difficulty lies not in a mechanical scientific curriculum and stringent technical examination, but in a more comprehensive Preliminary examination. There can be no better means of preventing the entrance of mentally incompetent men into pharmacy than by insisting that all who enter shall show evidence of at least a good second-class education. We require something more than a smattering of Latin, four rules of arithmetic, and a minimum of English. Some knowledge of geography and English history, mathematics, a modern language, and an elementary science would help to make the pharmaceutical Preliminary rank with similar examinations, and the knowledge would be of the greatest benefit to candidates in their after life.

Mr. Joseph Ince's account of pharmaceutical education in Geneva, which will be found on another page, shows how well the Swiss authorities have provided for education. The writer appears to believe that we have much to learn from our Swiss *confrères*. That may be so in one sense; but it will be observed that the superior educational facilities spoken of are in the purely scientific departments, and in these we question if Switzerland is in advance of some of the modern colleges in this country. In London, Edinburgh, Manchester, Liverpool, Nottingham, and elsewhere, there are institutions as modern and complete in their equipments as the Geneva school, and these institutions are open to pharmaceutical students. There is one point about the pharmaceutical examinations to which we desire to call attention. We have had repeated complaints regarding the misleading character of the Minor syllabus: the examination has outgrown it to an alarming extent. This is not fair to students, especially to those who do not have the advantage of being "coached" by men who know the examination as it is. The necessity for a new edition of the syllabus is urgent, and the revision should be undertaken without delay, or, what may be better, the present one should be strictly adhered to. Probably the result of this would be that the percentage of failures would decrease.

Pharmacy as an outlet for energy is insufficient for many young gentlemen, and the professions—medical, dental, and "scientific," undoubtedly receive a number of dissatisfied chemists every year. The medical profession is overstocked at present, and young men will be wise if, before leaving pharmacy for it, they consider whether they are not going "from the frying-pan into the fire." Medicine, an arduous and honourable calling, now demands a minimum of four years' study and the expenditure of several hundred pounds before qualification is attained. Science offers few inducements in the way of emoluments, and the man who is not a bright genius should hesitate to follow it for its own sake without a well-lined pocket. A degree in science is a useful thing to have, but it is not a marketable commodity. We cannot at present advise young men to leave the drug counter for the chemical bench. Not so with dentistry. This pursuit has always been associated with pharmacy, and the public have been the better of the union. The L.D.S. diploma gives the chemist a status equal to that of the "professional dentist," and the study necessary for it makes him more competent and more confident to undertake all dental operations. The information which we give regarding the examinations for this diploma shows that the difficulties are not excessive, and as there are provisions for dental education and examination in most of the large centres of popu-

lation in the kingdom, more attention might be given to qualification in this department.

The student should not be deterred by difficulties, or by the feeling that he is mentally incompetent to undertake studies required for any examination—desire and incompetence to learn are rarely found in the same individual. Knowledge is progressive, and it lasts longest when it is self-mastered. The student should rely upon himself, not upon his tutor. That individual exists to encourage and guide; it is his duty to enforce the fact that self-instruction is the most pleasurable means of acquiring knowledge, and that *education* in its true sense is superior to mere *teaching*.

THE PROSECUTIONS UNDER THE IRISH PHARMACY ACT.

THE mismanagement on the part of those who have undertaken the prosecutions of chemists and druggists in Ireland was brought to a climax at Belfast last week in the case of the *Society v. Johnston*. The solicitor, armed with a number of the *Dublin Gazette* containing a copy of the resolution which the Council of the Society had arrived at under the 15th section of the Act, and by which they determined that a chemist and druggist grade of pharmaceutical traders should not be created, had succeeded in convincing the presiding magistrate, apparently against his will, that his clients had power to prosecute, and the case was heard. But having secured this advantage, Mr. Lewis inadvertently threw his case away by omitting to prove that the poison certified to by the analyst was the same substance as that which had been purchased from the defendant. The sharpness with which his oversight was snapped at was indicative of something very like sympathy with the defendant on the bench. But, however this may be, it is difficult to understand the legal reason for abandoning the other prosecutions in consequence of the mishap which occurred in the first. The argument of the counsel for the defence seems to have been a very wide one. As we understand him he claims that not only chemists and druggists who were in business in Ireland before 1875, but also all who have assumed the title since, or who may assume it in future, are independent of the control of the Pharmaceutical Society, that body having neglected to provide in regard to them. Clearly, whichever way the Act is read, it leads to a muddle which can only be got out of by getting an amending Act enabling the Society to prepare a register of chemists and druggists as well as one of pharmaceutical chemists. It has been shown that the pharmaceutical chemists of the country are quite unable to meet the country's wants, and the Council of the Society seem to be willing, and even anxious, to meet the difficulty. Sir James Haslett, who speaks with authority on behalf of the chemist and druggist class, intimates a similar desire, so there ought not to be much internal difficulty. Moreover, as the noble lord who has evinced such a desire to rectify British pharmacy is an Irish peer, the pharmacists of Ireland ought to have at least that one friend in Parliament. At any rate, it is difficult to appreciate any excuse for neglect to take advantage of the opportunity which is now presented for moving in the matter.

THE UNOFFICIAL FORMULARY.

THE advent of this purely pharmaceutical child has not created the excitement which was anticipated. There would, no doubt, have been some hours wasted in discussing it at Manchester, had discussion not been discreetly forestalled, but the would-be orators will now be glad that they have

had an opportunity of putting the formulæ to practical test before criticising them. The production being now at the disposal of chemists, what they have to do is to make the most of it.

In their "introductory remarks" the Committee say that "in order to indicate clearly that the formulæ of the Unofficial Formulary are intended, it is suggested to the prescriber to add the letters, 'B.P.C.'" This sentence is addressed to the medical profession. How will it reach them? Judging from the exceedingly small number of copies of the New British Pharmacopœia which medical men purchased, we cannot hope that they will make a rush for the Formulary; but as the pamphlet is offered by the Committee at a low price, we would suggest that chemists should take advantage of this offer, and present medical men in their districts with a copy of it, calling their attention at the same time to the importance of having recognised standards for popular and potent preparations which are not official. Nor should the Formulary go without an intimation that the preparations of a compound character are kept in stock, and if samples of them are also sent they will undoubtedly bear fruit.

There is one omission in the Formulary—presumably intentional—which many will have noticed, viz., synonyms for the preparations which are to represent popular specialities. It will be necessary in many cases to supply doctors with this information, so that it is not out of place here to note that elixir cascara sagrada is a cascara cordial; ext. hamamelidis liq. is not an imitation of hazeline; lin. opii ammon. is a representative of Bow's liniment; liq. ferri hypophos. co., a new formula for Dr. Frederick Churchill's solution; liq. picis carbonis, an imitation of liquor carbonis detergens; Parrish and Easton are represented in the syrups, so is Fellows in syr. hypophos. co., but it is not a close imitation; and tr. ergotæ ammon. has several representatives in the market which are extensively used by accoucheurs. Their virtue is that patients cannot imbibe them so freely as ext. ergotæ liq. B.P., that is to say, they are active preparations, and the ammoniated tincture is a fair equivalent. It will be noticed that there are few, if any, of the preparations which cannot be made by the ordinary retail pharmacist; the object of the Committee has been to encourage home-made articles. We shall be greatly surprised, however, if some enterprising wholesale house does not make a leading line of the preparations and if a demand does not spring up for them amongst retailers. However that may be, retailers have the ball at their feet, and they should take advantage of it, if the cry against specialities is genuine. In addition to notifying doctors of the new era in pharmacy, chemists will find an outlet for their energies in putting up several of the articles for retail sale. Attractiveness in this is essential to success. Circularising will greatly help this department. The preparations which seem best suited for introducing to lay customers are elixir cascara sagrada (a laxative for ladies); elixir guarana (for sick headache); emulsio olei morrhue (a good winter speciality); lin. opii ammon. (for bronchitis and whooping cough in children); Parrish's syrup; syrup cascara sagrada (a laxative for children), and tinct. iodi decolorat. (for chilblains, &c.). Care must be bestowed both on circulars and labels in order to keep the medicines from stamp duty.

The *Lancet*, in a note on the Formulary, remarks that "the desirability of some such 'unofficial' information [as it conveys] must have been long felt by both prescriber and dispenser, who certainly like to feel sure of the composition of their remedies. As it stands, the 'unofficial formulary' is a protest against the use of remedies of secret composition. The work reflects great credit upon the committee entrusted with the duty of preparing it, and will doubtless be welcomed

both by physicians and pharmacists. The only criticism we would offer at present is as to the suggestion that the formulæ of the unofficial formulary should be indicated in prescribing by adding the letters 'B.P.C.' The first two letters have already such widespread and definite application that it appears a pity to disturb them, especially as the meaning of the third initial does not appear to be very clear." There is some reason in this criticism, and the point is one which might be considered by the committee. The letters "U.F." would indicate the origin of preparations more clearly than "B.P.C.," and would not lead to complications.

The Recognition of Homœopathy. Messrs. Churchill, as is well known, publish a *Medical Directory*. In 1852 the late Mr. Churchill issued a circular to every member of the medical profession asking the opinion of each as to the propriety or otherwise of retaining in the *Medical Directory* the names and qualifications of medical men practising homœopathy. Some of the answers received were amusing enough! One, writing from the Harrow Road, said, "No list of homœopathic 'quacks and humbugs'; I will not have my copy if you do; mind that!!!" Another says, "No; silent contempt and rope enough are the remedies." Another, presumably a homœopath, writing from Liverpool, said, "Omit my name at your peril. I beg to say that I am a qualified practitioner." Mr. Churchill, seeing that the omission of the name of a qualified practitioner would expose him to an action at law, continued to publish the names of all qualified men, but in deference to the prejudices of the majority refused to insert their public appointments. Recently, in reply to the firm's annual circular, Dr. Alfred Drysdale, of Cannes, named his public appointments, and threatened possible legal action in the event of their insertion being refused. The editors of the *Directory* reply intimating disregard of the threat, but stating in future they will insert present and past homœopathic appointments and published works. They explain that they had hitherto ignored homœopathy in the interests of the large majority of the profession, and that their motive in adopting a different course is that "members of the profession, from lack of information they expected to obtain from the *Directory*, have entered into professional relations with homœopaths, only to be unpleasantly terminated when they were made aware of the practice." Dr. Drysdale replies that he is aware they had been acting in the interests of the majority, and against the interests of the minority, but he fails to see how this makes their conduct any the less unjust. These particulars are gathered from the *Homœopathic Review*.

* *

A French Poisoning Mystery.

In the beginning of the present year a Madame Gondraud, the wife of a French lawyer, died from the effects of a draught supposed to have been a sleeping potion ordered her by the family doctor, but which turned out to have been strychnine. It was thought at first that the pharmacist who had dispensed the medicine had made a mistake—in fact, Madame Gondraud's husband, when his wife swallowed the fatal dose and loudly called out that she had been poisoned, tasted the medicine, and, suspecting its character, sent the nursery governess with the bottle to the chemist to ask for an explanation. The chemist looked at the bottle, and, finding out his mistake, went into an adjoining room where he substituted a similar bottle partly filled with a harmless sleeping-draught, which he handed back to the girl, saying that he had correctly dispensed the medicine. Although at first some suspicion was entertained towards the pharmacist, the affair was hushed up and likely to be forgotten, when rumours were spread through the village pointing to the nursery governess as the murderess of Madame Gondraud. It was said that the girl, Marie Monnet, was M. Gondraud's mistress, and expected to be confined of a child of which he was the father. These rumours were actively promoted by a cousin of M. Gondraud's, and also by his political enemies, and finally the police, acting upon an anonymous denunciation, arrested Marie Monnet and cast her into prison without more ado. After a fortnight's imprisonment Marie, at her own request, was medically examined, and it being proved beyond doubt

that she could not have been guilty of improper familiarity with M. Gondraud, she was released. The police then hit upon the bright idea of arresting the pharmacist upon whom suspicion had rested in the first instance, and he, in fact, confessed to having by mistake dispensed to Madame Gondraud the wrong medicine and thus caused her death. When the bottle was brought to him by the governess he exchanged it for another one, and threw the strychnine bottle away. The pharmacist was sentenced to three months' imprisonment and a fine of 4*l.*, while he was in addition condemned to pay 4*l.* damages (!) to Madame Gondraud's mother, who did not, however, live to enjoy this munificent award, she dying of grief two days' after the verdict. The chemist appealed, and has just succeeded in obtaining a reduction of sentence to fourteen days' imprisonment and 4*l.* fine. Another lawsuit arose out of the case, M. Gondraud and the governess prosecuting a Lyon's journal for defamation of character in commenting upon their conduct, and succeeding in obtaining 240*l.* damages, in addition to a fine of 25*l.*

* *

The Best Doctor. American medical journals have got hold of a good story which they are not likely to let go of. They say that a prominent official went to stay awhile in a strange town, and, needing medical advice, he applied not to the landlord of the hotel, nor to the local druggist, but went straight to the postmaster. "Tell me," he said, "which of the doctors of the city takes the largest number of journals?" The postmaster told him, and the gentleman replied, "A man who takes the journals of his profession is well-read and up with the times, and that is the doctor I want to treat me and my family."

* *

Amsterdam Quinine Works. On September 6 a meeting of shareholders in the reconstituted quinine manufactory was held at Amsterdam, for the purpose of fixing the statutes of the company. The capital is fixed at 250,000*fl.* (about 21,000*l.*), in five hundred shares of 500*fl.* (about 12*l.*). Four hundred shares have been taken up already, and the remainder must be placed before the end of 1892 at a rate not under par. The building and plant of the old quinine works have been taken over by the new company for the sum of 135,000*fl.* (about 11,250*l.*). Mr. W. Sieger has been appointed managing director of the works, and will be assisted by Dr. E. Sapper as technical manager. A board of five directors has also been elected, which includes Dr. J. E. de Vry, the quinologist. Of any profits made by the concern, after deducting 10 per cent. for wear and tear of the plant and 5 per cent. for the factory buildings, the shareholders are to receive a dividend up to 5 per cent. per annum on the amount of their shares. Any residue, in so far as it is not affected by the terms of the agreement with Messrs. C. F. Boehringer & Sons, of Mannheim, will be divided between the board of directors and the shareholders, in the proportion of 20 per cent. to the former and 80 per cent. to the latter.

* *

Cinchona in Java. According to a report of the director of the Government cinchona plantations in Java, published in the *Indische Mercur*, the crop of Government cinchona during the first half of 1887 was 135,000 kilos. (about 302,000 lbs.), mainly obtained by the felling of *Ledgerianas* and *Succirubras* in too closely grown plantations. In 1886 the crop during the corresponding period amounted to 60,000 kilos. (about 134,000 lbs.). The bulk of the harvest had already been forwarded to Batavia at the close of the half-year. The total yield of 1887, if the weather should not be too damp for the proper drying of the bark, is estimated at fully 700,000 kilos. (1,500,000 lbs.). The extension of the cinchona plantations is being pushed forward energetically, and also the uprooting of inferior cinchonas to make room for the propagation of *Ledgerianas* and *Succirubras*. At the end of June the Government plantations consisted of 1,786,500 trees in the open, including 932,000 *Ledgerianas*, 595,000 *Succirubras* and *Calopteras*, 199,500 *Officinalis*, 5,400 *Calisayas* and *Harskarlian*as, and 6,000 *Lancifolias*. In the nurseries there were 2,240,000 young plants, about two-thirds of which are *Ledgerianas* and the remainder *Succirubras*.

GERMAN APOTHEKER-VEREIN.

THE annual meeting of this august body was held in Munich simultaneously with the meeting of the British Pharmaceutical Conference in Manchester. It will be remembered, indeed, that the latter sent a telegraphic message of greeting to the former, which, we presume, was received; but the Teutons were actively discussing some knotty trade questions at the time, and forgot to acknowledge the courtesy. The work of the meeting commenced on the evening of the 29th with a reception, and next day the members, to the number of 270 (including a large number of ladies), met in the concert hall under the presidency of Dr. Brünnegrüber. The attendance, though larger than we could boast of at Manchester, was not so large as was expected; and it was remarked that, although this is the first time for many years that the society has met in South Germany, the attendance of Southern pharmacists was meagre. No less than three addresses of welcome were delivered, after which the chairman submitted the report of the executive committee, which showed the society to be in a flourishing condition, the number of members having increased from 2,820 to 2,882. The financial condition was considered to be satisfactory—that is to say, the income for the year was 30,980 marks, and the expenditure 43,100 marks. Of this latter sum 6,951 marks were devoted to benevolent purposes, 4,020 marks were required for scholarships, 15,500 marks for the *Archiv der Pharmacie*, and 16,009 marks for management, the establishment of a central bureau, &c. The principal matter for discussion on this day was a motion for the appointment of a general secretary and the establishment of a central bureau. A sum of 10,000 marks was required for this purpose. The motion was a very formal affair considering that the committee had already taken the initiative, but it gave the members an opportunity to speak their minds. An attempt was made to get at the name of the intended secretary, but all the information that was given was that he would be a man of great influence, especially with the daily press and the legislature, and with the highest authorities in State circles. All that and a central bureau for 500*l.* a year. Prodigious! Following this was a little confession by Dr. O. Schacht in the form of a report on the official journal. He had always contended—before the *Archiv* existed and since—that the journalistic venture would cost the society nothing, but the little sum of 15,500 marks against it had compelled him to change his opinion. He had found that money was required in order to get papers for the *Archiv*, but he trusted that the omnipotent bureau would bring grist to the mill for nothing. There followed a warm discussion on this. It was regretted by several that the *Pharmaceutische Zeitung* had not been continued as the official organ, and the result of the discussion went to show that in Germany, as in this country, private papers are far more successful and better appreciated than official journals. On the second day several motions were discussed; one calling for greater stringency in the preliminary examination was agreed to *nem. con.* Another, by which it was resolved "to petition the imperial chancellor to issue a decree prohibiting the advertising of medicinal remedies in any form," called forth warm expressions, and was only carried by a narrow majority. Dr. Schacht was the mover of the resolution. Amongst the opposition arguments was the singular one that, although they might prevent patent medicine makers from advertising, these gentlemen would soon snap their fingers at druggists, and get schoolmasters and ministers of the gospel to sell their goods. Nevertheless the resolution passed by 31 to 26 on a division, and a motion to limit it to unqualified persons was defeated by 28 to 26.

Four papers were read at the meeting, viz.:—(1) "On the Advance of Botanical Science," by Dr. Schlickum; (2) "On the Rational Preparation of Tinctures and Extracts, with special reference to Fluid Extracts," by E. Herold; (3) "On the 104th Birthday of Professor L. A. Buchner, of Munich," by J. A. Buchner (his son); and (4) "On the Different Kinds of Albumin in Urine and their Detection, with Contributions on the Analysis of Urine," by Dr. Friedlander. The members enjoyed themselves in festive ways in the evening, and on Thursday they visited the royal palaces at Starnberger Lake. Next year Rostock (Mecklenberg) will be the place of meeting.

CORNER FOR STUDENTS.

CONDUCTED BY RICHARD J. MOSS, F.C.S.

QUALITATIVE ANALYSIS.

THE subject of the next exercise will be a mixture of *two* salts. It is to be submitted to a thorough systematic examination, such as is required to detect all its constituents and to demonstrate the absence of other substances. In reporting students are to give a brief account of the analysis, with a summary of the results obtained, distinguishing as far as possible any accidental impurities from the chief constituents of the mixture.

Students' applications for a portion of the mixture will be received up to September 21, and the samples will be forwarded on the 26th.

REPORTS.

The mixture distributed for analysis in July consisted of equal parts of zinc sulphate and potassium alum. Its calculated composition was therefore as follows:—

Zn	..	..	..	..	..	11.33
Al	..	..	..	..	..	2.90
K ..	..	..	..	..	..	4.11
SO ₄	..	..	..	..	..	35.95
H ₂ O	..	..	..	..	..	44.71
						100.00

The number of reports sent in this month is unusually small; but it is satisfactory to be able to state that they represent very good work, the results being fairly correct in nine cases out of fourteen. There were two omissions to detect aluminium and one failure each in the detection of zinc and potassium.

The exercise did not present any special difficulty. The distinctive reactions of zinc and aluminium are sufficiently well marked to admit of these metals being separated with ease and accuracy. In the case of a simple mixture of this sort a sufficient separation is obtained by precipitating aluminium as hydrate by means of ammonia, the zinc remaining in solution. The solution should not be boiled, as this would result in the precipitation of more or less of the zinc, indeed, if the solution is dilute and no great excess of salts of ammonia present, all the zinc can be precipitated by boiling its ammoniacal solution. A more complete separation is effected by the use of barium carbonate, which, however, cannot be employed in the case of sulphates. The precipitation of zinc from solutions of its acetate by means of sulphuretted hydrogen affords an excellent method for separating this metal from most of the metals with which it is analytically associated. The colour of the sulphide is also highly characteristic.

The blowpipe tests for aluminium and zinc depending upon the colours produced when the oxides are ignited with cobalt nitrate, require considerable care, and in inexperienced hands they often lead to erroneous results. Alumina is not the only body which gives a blue colour; a similar coloration is produced by several other substances, notably the phosphates of the alkaline earths. The green-coloured mass produced by zinc compounds is more characteristic, but the modifying influence of other substances must always be taken into account. The student should, therefore, hesitate to draw final conclusions from these reactions; taken in conjunction with other reactions, as confirmatory tests, for example, they are most valuable.

PRIZES.

The First Prize for the best analysis has been awarded to LEWIS OUGH, Messrs. Balkwill & Co., Plymouth.

The Second Prize has been awarded to ALEXANDER REITH, 34 Gilcomston Park, Aberdeen.

Marks Awarded for Analyses.

Lewis Ough (1st prize)	..	95	W. C. Marshall ..	..	83
Alexander Reith (2nd prize)	£2		Coleraine ..	..	85
E. W. Harper ..	..	90	W. R. B. ..	..	80
H. D. Fuge ..	..	90	W. A. Barnaby ..	..	75
G. W. Bindloss ..	..	90	Walter Vernon ..	..	75
P. Smith ..	..	90	W. H. W. Peck ..	..	70
S. W. H. ..	..	90	G. E. S. S. ..	..	65

TO CORRESPONDENTS.

Prizes.—The students to whom prizes are awarded are requested to write at once to the Publisher, naming the book they select, and stating how they wish it forwarded.

Any scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.

Any scientific book which is sold for about five shillings may be taken as second prize.

* * * All communications should include the names and addresses of the writers.

E. W. HARPER.—The ferric chloride test gave some indication of acetic acid, but a satisfactory confirmation could only be obtained by operating on a considerable quantity of the mixture. It was clear that if an acetate was present it was only as a minute trace.

H. D. FUGE.—The observation that no sublimate is produced when the mixture is heated in a tube is not satisfactory proof of the absence of ammonia. It is not easy to observe a soluble sublimate when there is much water of crystallisation given off in the heating, and a small quantity of ammonia might be easily overlooked. A special test for ammonia should always be applied.

COLERAINE.—The water given off on heating the mixture did not exhibit an alkaline reaction; it was strongly acid. Alum loses part of its sulphuric acid when heated.

W. R. B.—Your work was not systematic. You can only claim to have shown that certain substances were present; you did not demonstrate the absence of all other bodies.

W. A. BARNABY.—There was not much potassium in the mixture—little more than 4 per cent, and it was only by testing the residue left after the expulsion of ammoniacal compounds from the filtrate from the group reagents that it could be precipitated. It is almost needless to point out that a manganese compound is scarcely likely to occur as a constituent of a perfectly white substance.

WALTER VERNON.—The blowpipe reactions of zinc are not, of course, so well seen when operating upon a mixture of this sort as they would be if a pure salt of zinc were employed. It would appear that your ammonia precipitate contained nearly all the zinc. If the solution was dilute, and the boiling continued long enough to expel nearly all the excess of ammonia, very little zinc would remain in solution, and only a slight precipitate would be produced by adding ammonium sulphide to the filtrate. The supposed magnesium reaction must have been due to aluminium.

W. H. W. PECK.—The greater part of the precipitate produced by ammonia dissolved on adding an excess of the reagent, as only about a fifth of it consisted of aluminium hydrate, but you can scarcely have obtained complete solution.

PHARMACEUTICAL EDUCATION IN SWITZERLAND.

BY JOSEPH INCE.

I HOLD as an article of faith that a perpetual strain after what is called improvement is a vain and hurtful thing; this is a creed applicable to the whole human race, but it specially commends itself to the pharmacist, who moves in a somewhat narrow circle, from which it is imperative that he should sometimes be set free.

Yet high authority has told us that though we may change skies our interests remain unchanged; the memory of old associations will cling round us, and a pharmacist should not altogether cast aside whatever may be profitable to himself or of advantage to those engaged in the same occupation.

The Alps are immediately before me, with Mont Blanc in the distance; I watch from an open window the changing lights upon the blue lake Lemán; while to the right stretches

the range of the Jura. Comparatively few English appear to have made Lausanne, but on the boat which takes one in three hours to Geneva our nation is in full force. It may be acceptable to some of our friends at home to know how pharmacy is taught in this typical Swiss city, so that they might be able to form a just estimate; and I have intentionally chosen a familiar rather than an official mode of description.

GENEVA.

Geneva possesses no special school of pharmacy—that is, none so called. The teaching of pharmacy and allied subjects is included in the university course, and belongs to the department of the *Faculté des Sciences*. The building representing this Faculty is the *Ecole de Chimie*. The winter session commences on October 15, 1887, finishing on March 22, 1888. The summer session begins on April 8, 1888, and ends on July 15. The whole university opens on October 22. There is a vacation of twelve days at Christmas. The *Ecole de Chimie* is a fine and imposing structure, standing in its own grounds, and forming one of the series of schools, which we should term colleges, which have been built just outside the town in the quarter called *les Bastions*. Immediately after leaving the splendid opera house, you enter the public gardens: on the left there is the botanic garden, and on the right the various collegiate edifices, such as *l'Ecole de Droit*, *l'Ecole de Médecine*, *l'Académie* (University of Geneva), and the School of Chemistry.

All these buildings in one sense might be called palatial, but for the absence of any attempt at external decoration. Being of very recent construction, they attract attention by a whiteness which is not familiar to a London eye. Convenience has in every case been studied, even to the detriment of architectural ornament.

In examining the details of *l'Ecole de Chimie*, undoubtedly that which most strikes an English pharmacist is the liberal scale on which distinct—that is to say, entirely separate—laboratories are provided for each section. There is one for physics, one for practical chemistry (students' course), another for chemical research, a fourth for chemical analysis. There is a special laboratory for microscopic work, and it need not be said there is a special laboratory for pharmacy. Added to which, each professor has a private laboratory of his own, and a retiring room which is his personal sanctum.

The matter may be explained by saying that this set of colleges is new; built to order; and that there was ample ground space at disposal. The rooms are large and lofty, ventilation being effectually promoted by a big chimney.

On one side of the building organic and inorganic chemistry alone are studied. I must not be blamed for a distinction which we do not recognise, that is the nomenclature adopted in Geneva, and it must be allowed to pass. The other side is devoted to the teaching and practice of chemical analysis.

The large students' laboratory is fitted with working benches, each arranged for two pupils, the space being about double that which it is possible to afford in our English schools; advanced students have an entire bench to themselves in their own laboratory. The general arrangements call for no remark—they are such as should be found in any well-appointed institution. The large lecture-hall, a square room with ascending seats, will accommodate 154 students. It is heated in winter by steam-pipes.

There is a separate room for the use of sulphuretted hydrogen and for experiments with noxious gases. Part is under cover, the rest is open to the air; it is not a fume cupboard, but a room of fair size, accessible but separate, in which a body of students may carry on such manipulations without either interruption or annoyance.

It may be recollected that some time ago Samuel Highley, who left bookselling for science, was energetic in advocating the claims of the magic lantern for the purposes of demonstration. At the Geneva school there is a regular photographic department, which is utilised in the various lectures. A separate lecture-hall is arranged so that it can be darkened at pleasure while the professor throws a magnified photograph of any desired object on a screen. There are cabinets of such illustrations, including drawings of apparatus, botanical sections, crystalline forms, tissues, and other specimens. Diagrams are greatly superseded, the method named being in full operation.

I must not forget the microscopic-room, with its laboratory, in which microscopy (hideous term!) is taught daily.

Practical botany is not taught in the winter session, but delayed till the summer. Like all other departments, it has its own laboratory.

Materia medica is not included in the syllabus of the *Faculté des Sciences*, but is relegated to the *Faculté de Médecine*, under the care of Professor Brun. Medical students, however, must get their pharmacy from *l'Ecole de Chimie*. A convenient reading and recreation room, communicating with the library, is provided for the students. The course of study for the subjects in which we are interested has been thus arranged for the coming year. The lectures are of one hour's duration.

Faculté des Sciences.

PHYSICS (Physique expérimentale)—Prof. C. Soret.	Winter Course—Heat, Electricity, and Magnetism. Four lectures weekly. Practical work in Laboratory. Summer Course—Sound and Light. Four lectures weekly.
PHYSICS applied to Physiology and Medicine (Physique médicale)—Prof. L. Soret.	Winter Course—Heat and Light. Two lectures weekly. Summer Course—Practical work in the Laboratory of Physics.
CHEMISTRY—Prof. C. Gräbe.	Winter Course—Five lectures weekly, with one lecture weekly on Soda Manufacture. Practical Laboratory work.
Inorganic Chemistry (Chimie technique)	
Organic Chemistry (Chimie technique organique).	Summer Course—Five lectures weekly, with one lecture weekly on the same subject in relation to the Arts. Practical Laboratory work.
TOXICOLOGY—Prof. Denis Monnier.	Winter Course—Two lectures weekly.
BIOLOGICAL CHEMISTRY—Same Professor	Winter Course—Food Adulteration. Once a week. Practical Laboratory work. Summer Course—Three lectures weekly.
PHARMACEUTICAL CHEMISTRY—Same Professor.	Winter Course—Two lectures weekly. Summer Course—Two lectures weekly.

The latter is a *cours libre*—that is, not compulsory, and not included in the degree examination.

During both the winter and summer sessions, Professor Brun gives demonstrations every day, and directs practical work in the laboratory of pharmacy. The course includes the use of the microscope, drugs, remedies, and adulterations. There are two professors of botany, one confining himself to the strict science, the other considering the subject in its medical relations.

BOTANY—Prof. Thury	Winter Course—Vegetable Physiology. Two lectures weekly. Summer Course—Structural Botany. Four lectures weekly. Practical work in the Botanical Laboratory four times a week.
MEDICAL BOTANY AND CLASSIFICATION—Prof. Muller.	Summer Course (only)—Five lectures a week. Botanical excursions.

Classification only is requisite for a natural science *baccalauréat*; both sections must be taken for medicine.

We must go to the *Faculté de Médecine* for—

MATERIA MEDICA AND PHARMACOLOGY—Prof. Brun.	Winter Course (only)—Drugs and Compound Medicines, New Remedies (their use and value), Medico-chemical Products, Official and Extemporaneous Formulæ. Two lectures weekly.
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This notice would be incomplete without a direct reference to the class of *Privat-docents*. These are teachers of eminence who are not professors on the staff, but who are engaged to give courses of lectures during the session on their own special subjects. M. Amé Pictet, well known for his researches with regard to the solidification of gases, gives one lecture a week throughout the academical year on organic chemistry. Special instruction is provided in the same way in various branches of chemistry and other sciences.

It would be unwise to draw a comparison between the teaching of Geneva and our own, founded on such cursory experience. It is certain that the Geneva school offers unusual accommodation for the various classes, chiefly in the direction of separate rooms and laboratories. There is extreme division between the different sections, and as for structural arrangements they have the advantage.

I am not disposed to yield one point as to results.

5 Avenue des Belles Roches, Lausanne.

Pharmaceutical Society of Ireland.

THE Council met at 3 P.M. on September 7 at the usual place, the President (Mr. William N. Allen) in the chair. Other members present:—Vice-President (Mr. Draper), Mr. J. S. Brunner, M.A., Mr. Charles Evans, Dr. Montgomery, Mr. Grindley, and Mr. Hayes.

The minutes were read and confirmed.

VOTE OF CONDOLENCE.

Mr. HAYES said that before the business of the meeting commenced, he desired to propose a vote of condolence with Mr. Doran, one of the members of the Council, on the occasion of his recent bereavement. He had known Mr. Doran for thirty years, and had always had a high opinion of him; and he was sure that all the members of the Council would sympathise with him in his trouble. He moved—

That this Council desire to convey to Mr. Doran their sincere regret and heartfelt sympathy in his sad affliction.

Mr. GRINDLEY seconded the resolution.

The VICE-PRESIDENT said he had the highest possible respect for Mr. Doran, and he was sure the resolution expressed the feelings of every member present.

The resolution was unanimously agreed to.

CORRESPONDENCE.

A letter was received from Mr. John Evans, L.A., thanking the Council for having elected him Examiner in Pharmacy.

A letter was received from Mr. John Bronte, L.P.S.I., dated "Tory Street, Wellington, New Zealand, July 9," stating that the Pharmacy Board of New Zealand refused registration to Irish pharmaceutical chemists. The writer stated that he interviewed the Hon. P. Buckley, the Colonial Secretary, on the subject, and he promised his assistance, and had redeemed the promise by introducing a Bill into the Legislative Council to add the word "Ireland" to "Great Britain" in the clause of the existing Act under which pharmaceutical chemists of Great Britain were entitled to registry, but which had been held not to include Ireland.

Mr. BRUNNER: I think we ought to be very much obliged to this gentleman for fighting our battle as well as his own.

The VICE-PRESIDENT: He should be thanked for his letter, and a copy of the calendar sent to him.

Mr. BRUNNER: The New Zealand Board recognise the licences of Victoria; Victoria recognises us. So that if one of our licentiates pays a fee in Victoria, he can obtain the licence of New Zealand in that way.

The VICE-PRESIDENT moved that Mr. Bronte be thanked for his letter, and a copy of the calendar forwarded to him.

Mr. HAYES: Have we shown reciprocity by admitting any of their members?

The PRESIDENT: We cannot; we have no power under our Act of Parliament to admit any strangers.

Dr. MONTGOMERY: Do we not admit members of the English society?

The PRESIDENT: No; we have not the power.

The motion was seconded, and agreed to.

A letter was received from Sir William Kaye, Q.C., Clerk of the Privy Council, enclosing a copy of an order of the Privy Council approving of the appointment of Mr. John Evans as Examiner in Pharmacy.

REJECTED CANDIDATES.

Another letter from Sir William Kaye related to one of certain resolutions passed by the Council on April 6, 1887, and forwarded on the 18th of the same month to him for approval by the Lord Lieutenant and Privy Council. That resolution was as follows:—

That any candidate who presents himself for examination, and who shall receive an examination paper in due course from the examiner, shall be regarded as a rejected candidate if he does not attend the examination throughout.

Sir W. Kaye's letter stated that he had been directed to inform the Council that it had been pointed out by the law officers of the Crown that the resolution might work hardly, as if a candidate got ill for a short time and had to leave

before finishing a paper, even though he had done all the others and his marks were sufficient, he would be classed as rejected.

The PRESIDENT said that, as the resolution had been passed on the motion of Mr. Brunner, he would ask him if he had any observations to make on the letter.

Mr. BRUNNER said he thought the comment of the Privy Council was rather like straining at a gnat; however, he would willingly endeavour to meet their wishes. The resolution was passed to put a stop to young men running into an examination, and then when they found the papers too difficult for them running away again.

The VICE-PRESIDENT: And they might, under such circumstances, take the papers away with them.

Mr. BRUNNER said the case put by the Privy Council was that of a young man being taken ill at the close of an examination, and he thought the Council should meet it in a way that would satisfy them. He moved that the following words be added to the resolution:—

Unless previous to retiring he shall have made the necessary number of marks to satisfy the examiners.

Mr. EVANS seconded the motion, which was unanimously agreed to.

RECIPROCITY.

A letter from Mr. William Daly Moore, a licentiate of the Apothecaries' Society of London, stated that he had presented his diploma to the President, Mr. Allen, and requested to be placed on the register of Irish Pharmaceutical Chemists.

The PRESIDENT said he had seen this gentleman's diploma, but he feared there was a legal difficulty in the way of complying with his request.

Dr. MONTGOMERY: This gentleman applied to me also. In the Apothecaries' Hall of Ireland we admit members of the London Society of Apothecaries, and present them with our diploma on the payment by them of six guineas.

Mr. BRUNNER: The words of our Act are—"The term 'Licentiate of Apothecaries' Hall' shall mean a person who has a certificate to open shop or to follow the art and mystery of an apothecary under the provisions of the Act of 1791."

Mr. HAYES: I do not think we can comply with the request.

The PRESIDENT: He can only be registered indirectly.

Dr. MONTGOMERY: Can we not get reciprocity with England in this matter?

The PRESIDENT: That is a large question. We have no means of reciprocity under our present Act.

Several donations were laid on the table and duly acknowledged.

NEW MEMBERS.

The following gentlemen were elected members of the Society:—Mr. Patrick Kelly, L.P.S.I., 43 Lennox Street, Dublin; Mr. James Archibald McKee, L.P.S.I., Rockfield, Portlanning; Mr. John Thompson, L.P.S.I., 25 Church Street, Coleraine; and Mr. John Patrick Thomas Temmon, L.P.S.I., The Pharmacy, Belherbet.

Some financial business having been disposed of, the Council adjourned.

THE IRISH PHARMACY ACT.

ANOTHER ABORTIVE PROSECUTION.

As briefly noted last week, another case under the Pharmacy Act was tried in the Summons Division of the Belfast Police Court on the 7th inst. The court was crowded with chemists, druggists, and apothecaries. The case was brought, at the suit of the Pharmaceutical Society of Ireland, against Mr. Jos. W. Johnston, Albert Bridge Road, who was charged with having sold a certain quantity of a poisonous drug, namely oxalic acid, contrary to the provisions of the Irish Pharmacy Act of 1875.

The magistrates on the bench were F. J. McCarthy, R.M., and Sir James Haslett, Mayor, the latter, however, only sitting in that place in virtue of his position. Mr. Lewis appeared for the Pharmaceutical Society, and Messrs. McErlean and McLeane for defendant.

Mr. Lewis said their worship would recollect they had obtained a conviction against a party for compounding a prescription on a previous day.

Mr. McCarthy: But for that only.

Mr. Lewis: Exactly, sir. But in answer to the other charge defendant alleged that the Registrar of the Pharmaceutical Society had failed in his duty in not making out a register of chemists and druggists, and that, therefore, what appeared to be their illegality was in effect due to the neglect of the official of the plaintiff Society. By the 27th section of the Pharmacy Act it is provided that in January of each year correct lists of pharmaceutical chemists and chemists and druggists shall be made out by the Registrar, and any extract therefrom shall be taken as evidence in all courts and proceedings. He now put in a printed copy of the latest list made out, and the court would see it contained no such name as that of J. W. Johnston, the defendant in the present case. If they now turned to the 15th section of the Act, they would find that the Council of the Society was authorised at its first or any subsequent meeting, by resolution or otherwise, to allow certain persons to assume the title of chemists and druggists, and to fix the form of examination for such persons as desired to be registered as chemists and druggists, if the Council should see fit to permit them to assume such title. It was clear this section rendered it optional with the Society whether it determined to establish and register such a class as chemists and druggists or not. Then the 17th section declared that any resolution come to by the Society should be of like force and effect as though it had been a portion of the Act. He would now hand in a document, and ask them to turn to page 42 of it, where they would see the Council had decided not to establish the rank of chemist and druggist. It was clear, therefore, defendant could not be a chemist and druggist, as there was no such person recognised by the Society, and consequently he could not be within the 30th section of the Act. It was admitted defendant was not a pharmaceutical chemist, and it would be proved he had not been in business before the passing of the Act of 1875, and, therefore, he had no legal right to sell a poisonous drug.

Mr. McErlean: I submit there is really no such body in legal existence as the Pharmaceutical Society of Ireland. No provision was made in the Act as to how any such body should sue, whether by its secretary or anything of the sort. We never have had any evidence as to the incorporation of such a body; it has no common seal, and until these two conditions are complied with, I assert it can have no existence in this or any other court. Mr. Lewis had referred to the Act of 1791, which had established the Apothecaries' Hall and otherwise sought to safeguard the rights of the business. Well, that Act was repealed by that of 1875. Prior to 1791 any person had a right to set up a shop and compound and dispense medicines; and if it can be proved that the repealing Act has been rendered inoperative by the neglect of those in whose interests it was passed, or otherwise, I submit we revert to whatever was the common law on the subject, except in so far as certain clauses of the 1875 Act may apply. Mr. Lewis took good care only to read the 30th section of the Act as far as it suited himself, but if their worships would read on they would see that the two ranks of pharmaceutical chemists and chemists and druggists were mentioned together without so much as a comma between them. Also, in reference to the 17th section, Mr. Lewis was careful not to proceed further than suited him. He did not read that portion wherein it was set forth that no resolution come to by the Council under the authority of the Act should be of any effect till approved of by the Lord Lieutenant and Privy Council, and till it should have been published in the *Dublin Gazette*.

Mr. Lewis: I hand in the *Gazette*, your worships.

Mr. McErlean, continuing, remarked that at the passing of the 1875 Act some of the foremost merchants in town were in business as chemists and druggists, and were so still, and yet from then until now no action was taken by this Society. It was also a very queer thing that this Council in Dublin should allow the Act to remain a dead letter throughout the whole country except in the town of Belfast. There must be some reason for this, and he thought he could point it out. On the last day they had the services of the spy and informer dragged into the case, and he understood it was intended to revert to the same dirty tricks to try and get a conviction that day. They were told that by the 15th section the Council might determine to allow certain persons to assume the title of chemists and druggists.

Mr. McCarthy: Subject to examination.

Mr. McErlean: It was clear that the intention of the legislature in compelling the Society to establish the rank of chemist and druggist was to conserve the interests of the very large class who were in business under that denomination at the passing of the Act. The chemists and druggists might have been foolish in not applying to the Court of Queen's Bench for a mandamus compelling this Society to register them; but surely they were not to suffer the extinction of their trade for the culpable negligence of the Council of the Society. He called the attention of the bench to what would be the result if these prosecutions were successful, and what would become of all the small towns in the country if they were to have nothing but pharmaceutical chemists; great mischief would be worked. By sub-sections of section 15 provision was made for the examination of persons desiring to be registered as chemists and druggists under the Act. He submitted that this implied that there would be such persons as chemists and druggists to be examined. He asked was there no duty thrown by the Act on this Society? Were they merely to sit in their office in Dublin, or wherever it might be—for he thought that point was somewhat doubtful—(laughter)—and issue their mandate to put in force just so much of the Act, and not a tittle more, as might seem to suit their particular purpose at the moment? It was preposterous to suppose the legislature contemplated ever allowing them any such convenient but most unfair latitude. In the 24th section of the Act it was surely not to be alleged that whole clauses of the Act were to be of no effect, simply because they might not suit the Society or its Council. By that section it was enacted that the registrar *shall* make and maintain a register of pharmaceutical chemists, and also of chemists and druggists in Ireland. Was no duty cast on the Society in reference to chemists and druggists there? could language be more distinct and precise? "It shall be the duty," those were the words, and the Court had already decided in consonance with the spirit of the Act. The obligation on the Registrar was mandatory and imperative. And it was further enacted, to enable the Registrar fully to perform the duty, that when a member died the Registrar could write for information, and if no answer were returned within six months he should write again, and then if no reply came within three months the name of such deceased member shall be erased from the list of membership, though there was provision made for the restoration of a name so struck off in certain eventualities. This showed plainly the importance the legislature attached to the formation of such register. Appeal could be made if they refused to register. Then section 27 was most important, providing for the publication and sale of correct copies of the register.

Mr. McCarthy: Of both pharmaceutical chemists and chemists and druggists?

Mr. McErlean: Yes, sir; with the names arranged in alphabetical order. It was clear from all this that until the Society formed such list or register, and showed that no person of defendant's name appeared on it, he had a perfect right to carry on his business without let or hindrance from this Society or anyone else. Pervading the entire Act was this necessity for a register of chemists and druggists. The 25th, 27th, 28th, 29th, and 30th sections all referred to the Registrar's duty in this matter, and pointed out in clear and distinct terms how he should perform it. Had such a register been in existence, the absence of defendant's name from it would have been conclusive evidence that he had no right to carry on his business. The language of the Act was entirely free from any ambiguity, and it had been laid down by Mr. Justice Buller that anything enacted by the legislature must be enforced, even where its effect might be absurd or mischievous. The words of an Act could not be construed contrary to their evident meaning, and that was just what the Society seemed to have been doing in the present instance. He asked them to look at its position there? It had no register, though distinctly enjoined by six or seven sections of the Act to provide one.

Mr. McCarthy: They made no register of chemists and druggists after the passing of the 1875 Act.

Mr. McErlean: No, and they could not take advantage of the non-compliance with a duty which the law clearly cast on them.

Mr. McCarthy: You assert that the 25th section renders it imperative on the Society to keep a register of chemists and druggists?

Mr. McErlean: I do, sir.

Mr. McCarthy: And you rely on that?

Mr. McErlean: Surely, sir.

Mr. Lewis: The 25th and several other sections undoubtedly do refer to both registers, but these all follow on the 19th section, which sets forth that none of those preceding provisions shall take effect until after the publication in the *Dublin Gazette* of the notice of approval of said regulations made at a meeting of the Council. Now, I am able to show that the Council never approved of the formation of a list of chemists and druggists—in fact, that it decided not to establish any such class, as it was empowered to do by the 15th section, which left it optional with it whether to do so or not. They published the necessary notice in the *Gazette*, stating that they would not make any register of chemists and druggists. You must interpret the 26th, 27th, and 28th sections by the 15th and 19th. The Council has exercised its optional powers, as it had a perfect right to do, and therefore the provisions referring to the formation of a register of chemists and druggists became a dead letter.

Mr. McErlean: Then the answer to that is that we revert to the position we were originally in.

Mr. Lewis: If we had so wished we could have convicted defendant under the old Act, for the article he is charged with having sold is oxalic acid, which is specified in the Poisons Act.

Mr. McErlean: Mr. Lewis says the 19th section governs this case.

Mr. Lewis: No, I said the 15th and 19th with sub-section 3 of the 16th.

Mr. McErlean: So far as I can make out, Mr. Lewis intends to convey that the Council quietly abrogated whatever portion of the Act seemed to them inconvenient.

Mr. McCarthy: Well, I have a doubt on the subject.

Mr. Lewis: Will your worship state a case for us?

Mr. McErlean: Oh, we shall be only too delighted. (Laughter.)

Mr. Lewis: Under the 16th section—

Mr. McErlean: Now what is the use of proceeding when his worship has given his decision. (Laughter.)

Mr. McCarthy: No, no; what is the difference between a pharmaceutical chemist and a chemist and druggist? All were entitled to trade before 1875?

Mr. Lewis: When the Act of 1875 was passed the Council met, and as it wished to raise the standard of the profession as much as possible, and to make it like what it was in England, it determined for the time being only to establish one grade or class.

Mr. McCarthy: Was notice to that effect published in the *Gazette*?

Mr. Lewis: It was, sir.

Mr. McCarthy (after reading the *Gazette*): I think that alters the case.

After some further slight discussion, in which the arguments already advanced were reiterated, the Bench held that the Council had complied with the Act, in publishing its intention in the *Dublin Gazette* not to establish the class of chemists and druggists.

Mr. McErlean: I have in my favour a former decision of this Court, where the facts were exactly the same, and I think it is rather strange if that decision is now to be reversed, no new facts having been adduced.

Mr. McCarthy: I have evidence to-day that was not produced previously.

Mr. McErlean here endeavoured to read a letter signed by Mr. J. E. Brunker, which appeared in THE CHEMIST AND DRUGGIST.

Mr. Lewis: I object to that being read; it has nothing to do with the case.

Mr. McCarthy: There is no use, Mr. McErlean; I rule against you, so the case had better proceed.

Mr. McErlean: But you decided with me before.

Mr. McCarthy: I hold the notice in the *Gazette* does away with the necessity for having two lists.

James Martin, Carrickfergus, was then sworn, and in answer to Mr. Lewis, deposed that he purchased the packet (marked "oxalic acid") produced in the shop of Mr. Johnston, chemist, Albert Bridge Road. He was not asked for his name nor required to sign any book.

Cross-examined by Mr. Erlean: I do not intend starting in business as a pharmaceutical chemist, or chemist and drug-

gist, nor do I know what the words mean. I did not want the drug for myself; I was asked to go and purchase it by Mr. Lewis. I asked the person in the shop for oxalic acid to clean brass, but I did not want it for that purpose. I could not say who it was I saw in Mr. Johnston's place. I do not know that gentleman by sight. It was in May I purchased the drug. It was Mr. Lewis who paid my train fare to Belfast. I was four days in all at this work, for which I got 16s. I got 10s. out of the fine imposed on a previous occasion. After buying the drug I handed it over to Mr. Lewis, and I saw it twice since, I believe. I marked the date of the purchase on the packet, but did not initial it.

Dr. McNaught, in answer to Mr. Lewis, said he had analysed the packet produced. It contained enough oxalic acid to poison all in court.

Mr. McErlean having cross-examined the witness at considerable length,

Mr. Lewis said that closed his case, and he would ask for the full penalty—5*l.* and 1*l.* costs.

Mr. McCarthy: We have had no evidence that this is the same oxalic acid Martin purchased. Who gave the acid to be analysed?

Mr. Lewis: I gave it to Dr. McNaught.

Mr. McCarthy: But you were not examined.

Mr. Lewis: Oh, I will be examined now, then.

Mr. McErlean: Indeed you will not. You said you had closed.

Mr. McCarthy: You cannot be examined after having closed your case. I shall dismiss the case without prejudice.

Mr. McErlean: Will you give me 20*s.* costs, sir?

Mr. McCarthy: No.

The Court then adjourned.

Before leaving the bench the mayor, Sir James Haslett, who had been summoned as a witness on behalf of the defendant, and who had not, therefore, taken any part in the adjudication, said he was glad Mr. McErlean had been able to get along without his services.

Mr. McErlean: I assure your worship I should not have had you summoned, but that I believed you could give important evidence for my client had certain circumstances arisen.

The Mayor: I think it is a great pity it should have been considered necessary to institute these prosecutions at all. I believe the whole trouble is attributable to the defective and unsatisfactory nature of the Act of 1875, and the probabilities are there will continue to be more or less unpleasantness and misunderstanding till something has been done to amend the present state of the law. As a matter of fact, I think the real reason why the Council declined to establish the grade of chemist and druggist was because it feared that had it done so such persons would rank practically as pharmaceutical chemists—a consummation it was naturally anxious to avoid. (Laughter.) It seems to me that the best way would be for all parties interested to co-operate with the view of obtaining a new Act, which could be framed so as to obviate the difficulties now experienced.

Mr. McErlean quite agreed with the view his worship took of the question.

Mr. McCarthy asked what was going to be done in the other cases.

Mr. Lewis: Oh, we shall withdraw them; there is no use in going on after what has happened in Johnston's case.

DEATHS.

[Notices of Marriages and Deaths are inserted free if sent with proper authentication.]

CORFIELD.—On August 22, Thomas John T. Corfield pharmaceutical chemist, St. Day, Cornwall. Aged 72.

FARLOW.—On August 29, at Eastbourne, James Southward Farlow, chemist and druggist, of Brook Green, Hammer-smith. Aged 24.

FIELD.—On August 19, suddenly, while on holiday in the Isle of Man, Henry Field, chemist and druggist, of Pinders-fields Road, Wakefield. Aged 39.

HARRISON.—On September 2, Thomas Harrison, chemist and druggist, of Bradford, Yorkshire. Aged 77.

BANKRUPTCY REPORTS.

GEO. JOHNSON, Godalming, Chemist.

THE public examination of this debtor was held at the Guildford Bankruptcy Court on Tuesday, September 6, before Mr. Registrar Day. Mr. T. W. J. Britten (deputy official receiver) represented the estate, Mr. F. W. Reynolds, solicitor, the trustee, and Mr. H. S. Hubbard, the debtor. The statement of affairs shows—Unsecured creditors, 1,855*l.* 1*s.* 10*d.*; and assets, cash in hand and at banker's, 23*l.* 13*s.* 2*d.*; stock-in-trade at cost, 505*l.* 6*s.* 1*d.*; fixtures, 274*l.*; furniture, 180*l.*; other property, 163*l.*—total, 1,122*l.* 6*s.* 7*d.*; estimated to produce 530*l.* 15*s.* 9*d.*; book debts, 325*l.* 12*s.* 5*d.*—total, 880*l.* 1*s.* 4*d.*; preference creditors, 71*l.* 3*s.* 8*d.*; net assets, 808*l.* 17*s.* 8*d.*; deficiency, 1,046*l.* 4*s.* 2*d.* The Official Receiver's observations are:—The debtor commenced business as a chemist, &c., at Godalming in 1870, with a capital of 120*l.* of his own. He states that he has never taken stock, that he has never prepared any statement of his affairs for the last three years, and that he did not become aware that he was insolvent until June 28 last. A private meeting of the debtor's creditors was held shortly before the filing of the petition, when an offer was made to them which they refused. On the application of eighteen creditors amounting to 845*l.* 16*s.* 4*d.*, I appointed Mr. Oscar Berry as special manager of the business. The debtor has been adjudged bankrupt on his own application." In answer to the Deputy Official Receiver the debtor stated that previous to commencing business at Godalming he had carried on a business at Hackney Road, London, for three and a half years as a chemist. He originally commenced business with a borrowed capital of 50*l.*, and the result of his trading was that he was able to sell his Hackney Road business, pay off all his liabilities, and have a balance of 120*l.* With this he commenced business at Godalming. He had kept a day-book, ledger, and cashbook, the latter of which contained an account of all the receipts and payments for the last eleven years, but he had never balanced the books nor prepared a profit and loss account; had never taken stock, nor been in partnership. He could give no proof that the alleged cause of his failure was accurate. He could only attribute it to the mismanagement of his late foreman. Did not say that he had robbed him of anything, but beyond this cause he knew of no other to account for the deficiency. He knew that he had not spent the money. The whole of his assets had been given up to the Official Receiver. His life was not insured, and had never been so. During the twelve months preceding the receiving order he had not pledged any goods, nor within three months made any special or preferential payments to his creditors. In June he was pressed by creditors and he consulted his solicitor, and ultimately a private meeting of his creditors was called. He paid his solicitor 10*l.* on account of his costs, and he also made a further payment of 10*l.* to a suing creditor. The private meeting was held on July 6, and between the dates of the notice being issued and the meeting he (bankrupt) ordered goods as usual. He was aware at this time that he was unable to pay 20*s.* in the pound. He had never before found himself in difficulties. Had never been served with any writs previous to June last, but he had had to borrow money several times to pay trade creditors; some of this was still owing, namely, 104*l.* to Mr. Luff. The Deputy Official Receiver pointed out that debtor had stated in the schedule that the consideration of his debt was for goods sold and delivered. The bankrupt said this was inaccurate. A part of this was for goods and the other for money lent. When he found that he was obliged to borrow, which was in 1885, he did not go into his position, neither did it strike him that he was getting into difficulties. Was unaware of any further loan transactions. He was never of opinion that there had been a loss on his trading ever since 1881, but he only discovered it when he was pressed by creditors. During the whole six years he never went into the question of profit and loss. His household and personal expenditure amounted to about 6*l.* 10*s.* a week. He kept in his house three assistants and two servants, besides his family, so that the greater part of his household expenses was in connection with the business. Mr. Reynolds offering no opposition the examination was concluded.

The following are the creditors:—

	£	s.	d.
Barringer & Sons, London	53	9	3
Barclay & Sons,	11	17	1
Billing & Sons, Guildford	24	10	6
Burfield & Son, Haisham	10	8	5
Cavandar & Co., Portsea	49	16	6
Cope Bros., London	59	17	11
Crew, Widgey & Co., Bristol	41	12	1
Cowan, Derby & Co., London	28	15	10
Dallett & Co., London	10	13	0
Hitchcock & Son, Guildford	13	10	10
Hearon, Squire & Co., London	42	14	9
Holborn & Sons, London	46	0	1
Horne, G., Godalming	10	5	11
Imwood, J.,	34	12	7
Isaac, J., & Son, London	10	0	5
Knight, W., & Co., Godalming	43	14	2
Lloyd & Co., London	10	0	7
Luff, T., Godalming	104	19	9
Morrison, Wood & Co., London	12	5	8
Row, T. B., & Co., Brentford	12	1	10
Silverlock, H., London	18	5	4
Smith & Son, Godalming	52	11	9
Saunders & Son, London	13	7	8
Smith, W. G., Staines	12	6	3
Sales, Pollard & Co., London	18	13	5
Sheldrake & Co., London	10	13	3
Stafford, Oswin & Co., Leicester	10	13	0
Taddy & Co., London	41	1	0
Thompson, Millard & Co., London	11	0	2
Welch & Price,	10	15	10
Wills, W. D. & H. C., London	37	10	7
Weston, C. F., Godalming	14	1	11
Woodridge, H.,	32	7	1
Wilkins, G., Guildford	10	10	0

Preferential Creditor.

Robinson, J. F., London	50	0	0
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MARCUS LEON (trading as Marcus Leon & Co.), Grosvenor Road, Pimlico, Manufacturing Chemist.

THE first meeting of creditors in this matter was held on Wednesday at the London Bankruptcy Court, before the Assistant Receiver. The failure took place on July 22, and the total liabilities are returned at 1,981*l.* 17*s.* 6*d.*, of which a sum of 546*l.* 3*s.* 2*d.* is partly secured. The Official Receiver observes that the debtor began business, in November 1886, with borrowed moneys, and attributes his failure to his expenses having been in excess of his profits. He has only kept books showing cash receipts and payments, but has submitted, by an analysis of the entries therein, to give an account of his deficiency, which shows that the deficiency at Nov. 1886 was 370*l.*, and the business expenses from then till the date of failure were 1,697*l.* 7*s.* 2*d.*, of which 960*l.* was for uniforms for 300 boys. During the period his sales were 2,000*l.*, and profits 500*l.* The securities held by creditors, treated as partly secured, consist of parcels of goods of the estimated value together of 100*l.* The debtor states that the bulk of the furniture at his residence is in course of purchase under a hire agreement, and that any interest therein is claimed by his daughter. The other property is stated to consist chiefly of the 300 uniforms mentioned in the deficiency account, which, for the purpose of sale, the debtor estimates as of no value. The debtor states that he filed a petition for liquidation in 1873, when he bore the name of Max Benjamin Schumann. The file of proceedings shows his then liabilities at 46,193*l.*, with assets 25,252*l.* The following are the creditors:—

	£	s.	d.
Covill, J., Upper Norwood	15	18	0
Cobham & Isaacson, New Inn, Strand	10	0	0
Davies, R., & Co., Camberwell New Road	10	13	6
Darnell, J., & Sons, Kingsland Road	37	7	0
Read, W., & Marks, Fleet Lane, E.C.	24	9	3
Rudson & Co., Pimlico	20	0	0
Leon, Mrs. C., Claverton Street, Pimlico	356	14	7
McCorquodale & Co. (Limited), Cardington Street	10	0	0
Moses, S., Mansell Street	41	7	5
Mandleberg, J., & Co., Manchester	23	7	5
McCabe, J., & Thos., Tottenham Court Road	19	16	3

	£	s.	d.
Maple & Co., Tottenham Court Road..	90	0	0
North British Rubber Company, Moorgate Street	21	3	4
Rexe, J. W., & Sons, Hamburg	12	6	8
Rose, Sir W. D., & Co., Upper Thames Street	24	13	3
Shelton, J., Walsall	15	1	6
Straker, Chas., & Sons, Camomile Street	58	15	3
Sweeting, R., & Sons, Brixton Road	26	1	3
Smith's Mutual Discount Company, Fleet Street	24	14	0
United Telephone Company, Oxford Street	20	0	0
Wyatt & Co., Tabard Street, Borough	10	0	0
Warner Bros., Chiswell Street	17	10	0
Wright & Asbridge, Dowgate Hill	32	15	0
Williams & Co., George Yard, Lombard Street	210	0	0

Partly Secured.

Angus, Wm., Queen Street, Tower Hill	105	0	0
Kroll, Ludwig & Co., Mark Lane	300	0	0
Lloyd & Sons, Dockhead	141	3	2

Mr. Fk. Kent, on behalf of the debtor, offered a composition of 2s. 6d. in the pound, and after a short discussion this was accepted by the creditors.

Gazette.**PARTNERSHIPS DISSOLVED.**

OGLEBY, C., & Co., Paradise Street, Lambeth, manufacturers of candles and nightlights. As far as regards E. J. Stephens.

TILBURY, W., & Co., Farnborough, mineral water manufacturers. As far as regards W. Tilbury.

THE BANKRUPTCY ACT, 1883.**RECEIVING ORDERS.**

CRANFIELD, SAMUEL, Rolvenden, Kent, veterinary surgeon.

LOWE, WALTER, Irlam, near Warrington, late of Moss Side and Chorlton-on-Medlock (trading as Walter Lowe & Co.), late chemist and druggist.

ORDER MADE ON APPLICATION FOR DISCHARGE.

BROTHERS, WILLIAM, St. Anne's-on-Sea, formerly of Liversey Works, near Blackburn, now out of business, formerly fire-clay and chemical manufacturer. Discharge granted, but suspended for fourteen days.

FIRST MEETING AND PUBLIC EXAMINATION.

BARRETT, ARTHUR JOHN (trading as Napoleon Price & Co.), Cumming Street, Pentonville, London, soap manufacturer. Sept. 20, 33 Carey Street, Lincoln's Inn; Oct. 19, 34 Lincoln's Inn Fields.

ADJUDICATION.

CRANFIELD, SAMUEL, Rolvenden, Kent, veterinary surgeon.

JOINT-STOCK COMPANIES.

Pursuant to Section 7 (4) of 43 Vict. c. 19 (Companies Act, 1880), the names of the under-mentioned companies have been struck off the register, and such companies are dissolved:—

Horehound Beer Brewery Company, Limited.

Jeyes' Disinfectant Soap Company, Limited.

London Insecticide Company, Limited.

Metropolitan and Suburban Mineral Waters Company, Limited.

Scap Compound Company (Way's Patent), Limited.

Notice is given, pursuant to Section 7 (3) of said Act, that at the expiration of three months from August 19 the names of the under-mentioned companies will, unless cause is shown to the contrary, be struck off the register, and the companies will be dissolved:—

Bovine Wine Company, Limited.

Hungarian Petroleum and Ozokerit Company, Limited.

Warren's Lubricant Company, Limited.

Trade Notes.

MESSRS. A. & M. ZIMMERMAN now occupy new offices at 6 & 7 Cross Lane, St. Mary-at-Hill, E.C.

MESSRS. DUKAS & Co., of Red Lion Square, W.C., have just issued a new illustrated price-list of household brushes, which is very complete.

RHI KA TEL, the mustard-oil imported from East India by Messrs. Blackie & Co., of 5 Fenchurch Street, E.C., is an amber-coloured oil, possessing the mild rubefacient properties which have made East Indian oil of mustard-seed a popular winter remedy. Rhi Ka Tel is put up in shilling bottles.

MESSRS. RÖSING BROS. & Co. of 10 Basinghall Street, E.C., announce the death of their senior partner, Mr. Ferdinand Rösing. The business of the firm will be continued by the remaining partners, while the two sons of the deceased gentleman will be admitted as sleeping partners.

MESSRS. FORD, SHAPLAND & Co., of 6 Great Turnstile Street, E.C., have now ready their packet and purse calendars for 1888. These are tastefully got up booklets, the paper being good, the printing clear and distinct, and the information conveyed is of a very useful character. There is good provision for "own matter."

MR. JAMES TOWNSEND, of Exeter, sends us samples of his almanacs for next year. The bouquet almanac for the pocket is a pretty production, and Mr. Townsend has taken care to eliminate from it wording which might render proprietary articles liable to stamp duty. The Universal Almanac (crown octavo) contains very readable matter, and is otherwise useful.

CLEOPATRA.—Under this name the French Hygienic Society, of Conduit Street, are introducing a new hair dressing, the basis of which is a euphorbeaceous plant. The dressing is applied to the roots of the hair, and a few applications of it induces a healthy tone in the oil-glands, and stimulates growth. Like all the preparations made by the Society, "Cleopatra" is a good article attractively put up.

THE FRENCH GOVERNMENT have conferred the Cross of the Legion of Honour upon M. Roure-Bertrand fils, of Grasse, the well-known essential oil distiller. The distinction has been given to M. Bertrand in recognition of the services rendered by him to the essential oil industry in Southern France, and on account of the particularly meritorious exhibit of his firm at the Liverpool Exhibition last year.

A NEW SOAP.—The soap trade of chemists has greatly diminished, and has almost vanished so far as the lower qualities are concerned. The only chance which there is of maintaining the returns from this department is to place novelties of a high-class character before customers, and we should think that there will be considerable satisfaction in introducing the Cashmere bouquet soap made by Messrs. Colgate & Co., of New York. This is a cream-coloured soap, in oval tablets; it is remarkably pure and high-scented, and is put up in neat half-dozen boxes, with several elegant and artistic show-cards. The agents, Messrs. Burroughs, Wellcome & Co., inform us that a liberal supply of sample tablets (one-fourth the regular size) are presented to the retailer, so that sales may be facilitated. It is the favourite soap in the "States."

A PRIEST-SOLDIER-SCIENTIST.—A young Catholic priest and scientist of Charleston, Illinois, who was recently created a lieutenant in the French army for valuable discoveries in the art of making and using a powerful explosive for war purposes, claims to have made a more valuable discovery, or rather rediscovery. He says he has fathomed the art of making Greek fire, which was lost in the Middle Ages about 1250, when gunpowder came into use. The compound consisted of naphtha and two other ingredients, and its power of destruction is marvellous. It will so corrode iron as to dissolve it, while water, instead of extinguishing it, will only increase its power. The inventor will soon publish an article on the subject of his great discovery.

Trade Report.

Note to Retail Buyers:—It should be remembered that the quotations in this section are invariably the lowest net cash prices actually paid for large quantities in bulk. In many cases allowances have to be added before ordinary prices can be ascertained. Frequently goods must be picked and sorted to suit the demands of the retail trade, causing much labour and the accumulation of rejections, not all of which are suitable, even for manufacturing purposes.

It should also be recollected that for many articles the range of quality is very wide.

42 CANNON STREET, E.C., September 15.

BUSINESS has been very quiet this week and the alterations that have occurred in the market are few and far between. Camphor and borax are apparently making for an advance, though in the latter article the signs of movement are less pronounced than in the former. Opium is still advancing at Smyrna, and our own quotations are now considerably below the parity of that centre. Glycerine is tending higher. The cinchona sales have resulted in a fresh decline in the value of bark, and quinine is weak. The German manufacturers of cocaine now offer at reduced prices. Caustic soda and soda crystals are easier in London. Caraway seed, soy, and Japan wax are dearer than at the time of our last report. Business in cod-liver oil is waking up, and at Liverpool more money is asked for second Calcutta castor oil; on the other hand, cottonseed, linseed, and palm oils, as well as turpentine, are all cheaper. In spices there is not much doing; pepper is advancing, but cloves and chillies can be had at less money. A brisk business is doing in shellac, which declined about 2s. per cwt. at the auctions, but has since partly recovered that loss.

ACID (CITRIC) closes fairly steady, but business is limited in extent, and no higher price than 1s. 8½d. per lb. can be quoted for spot. In Sicily lemon-juice is very firm, and there are no sellers except at very high rates. The stock is reported to be much reduced, and purchases so far have been mostly intended to cover sales. Daily shipments are taking place, it is said, to the consuming centres.

ACID (SULPHURIC).—Brown, s.g. 1.720, is quoted at ¼d. per lb., and concentrated, s.g. 1.845, at ¾d. per lb.

ACID (TARTARIC).—In Sicily all tartar materials remain very firm, but not much business is reported. Our market is quiet at 1s. 7½d. to 1s. 7¼d. per lb. for *English*, nominally, and 1s. 6½d. per lb. for *foreign*.

ALUM is well inquired for; 5l. 10s. is the price for loose lump, and 6l. for ground alum, both per ton.

AMMONIA COMPOUNDS.—*Carbonate* remains very neglected at 4d. per lb., less 17½ per cent. *Sal-ammoniac* steady, but not in very brisk demand; firsts at 34s., seconds at 32s. per cwt. *Sulphate* steady at 12l. 3s. 9d. for grey 24 per cent., and 11l. 15s. Beckton terms, London, and 12l. 3s. 9d. on the spot at Hull, though it is stated that sales might be made at considerably lower figures for October-December. At Leith 12l. is asked nominally.

ANISE.—The quality of the *Russian* crop proves to be a very fair one, although rumours have been current to the effect that the grain had been shrivelled by the prevailing drought. As regards quantity, the yield is greater than last season's, and a good deal of business has been done in this variety at 22s. to 24s. per cwt. for arrival. *Italian* and *Spanish* anise are dear, say at 32s. to 35s. for the former and 45s. for the latter.

ARNICA FLOWERS.—The present Continental crop is on the average of less good quality than that of the preceding season, although a few really fine parcels are met with here and there.

ARSENIC.—The price for white powder keeps very steady at 11s. 3d. to 11s. 6d. per cwt.

BLEACHING-POWDER—8l. 15s. remains the nominal price, but the demand has slackened a little, and a shade less might buy.

BORAX—We hear from Hamburg that large contracts for delivery over 1888 have been made there during the last few days, and that a good demand still prevails. English makers quote from 30s. to 32s. per cwt., one manufacturer even asking 35s. per cwt., but second-hand sells much lower. It appears that the German borax refiner's union now sell their product with a guarantee against loss.

CAMPHOR.—To-day *crude* Japan is quoted at 70s., and China at 67s. 6d. per cwt., which is a considerable advance upon the rates paid a few weeks ago. It is reported that the foreign makers of *refined* camphor have advanced their price by ½d. per lb.

CANARY SEED.—Values remain substantially unchanged, *Turkish* seed on the spot being held at 42s. to 44s., and 46s. for extra clean, *Morocco* at 49s. to 52s., *Spanish* at 53s. to 60s., and *Dutch* seed at 50s. to 54s. per 464 lbs. Arrivals from the new crop of *Turkish* seed are still coming in, and further shipments are advised. The trade in this variety has, however, been very limited as yet, as there is still a good deal of old seed in hand, and holders prefer to part with the latter first. On the other hand, the gradual reduction in current values have brought out more orders, both from the States and the continent of Europe, where stocks are evidently anything but large. More reliable reports on the crops of the leading varieties have now been received. There is an exceedingly large yield throughout the producing districts in Turkey, which the unusually early shipments from those parts tend to confirm. There has also been a considerable increase in the production of the River Plate, where this year's yield is put roughly down as showing an increase of 35 per cent. against last season. In Holland the acreage will be less than that of last year. In general an improvement in the quality from the more distant producing quarters is noticeable.

CANTHARIDES.—The demand for new *Russian* flies is increasing. Holders here ask 6s. 9d. per lb. for good new *Russian*.

CARAWAY SEED.—Slightly higher prices are asked for *Dutch* seed, in sympathy with the advance of the market in Holland, and 30s. per cwt. is now the ruling quotation. The same price is asked for *English* caraway. The crop in Holland has been good; in Russia and Germany it is stated to have been, on the whole, satisfactory. Sales of *Russian* seed at 23s. to 24s. per cwt. are reported.

CHAMOMILES.—There is very little change in the market. Holders still ask from 6l. to 7l. 10s. per cwt. for new Belgian flowers, but these high quotations have, for the moment at least, checked business.

CINCHONA.—At the fortnightly auctions held on September 13, a total supply of 4,689 packages was offered for sale, over one-half being South American. Of Ceylon bark, 1,791 packages were placed in sale, and nearly all disposed of; 187 packages of Java bark, and 178 of Indian growth also changed hands. There was only a very moderate demand throughout the sales, and only the determination of holders to sell their goods even at a decline prevented the bulk from being bought in. Prices ruled decidedly lower all round, and it is stated on good authority that the unit averaged certainly not above 2d. There were comparatively few lots of the commoner qualities; renewed red bark was in very good supply, and the Java barks included some very fine rich parcels.

COCAINE.—The German makers have reduced their quotations, and now quote bulk as low as 10½d. per gramme.

COPPER SULPHATE quiet at 13l. 15s. per ton for ordinary firsts.

CREAM OF TARTAR remains very steady at 129l. to 130l. for fine white; supplies are still scanty.

CUMIN SEED.—There is no alteration to report in the values. The scarcity continues, and *Maltese* seed is firmly held at 47s. to 48s. per cwt., while for other varieties from 30s. to 40s. is quoted.

FENUGREEK SEED remains firm at 7s. 6d. to 8s. 6d.

per cwt. The demand, especially for export, is a good one, but supplies here are scarce.

GLYCERINE.—A very firm feeling prevails, and it is stated that the Continental refiners are everywhere buying up whatever parcels of crude glycerine are offering. Makers' agents here quote from 80*l.* to 82*l.* for 1,260 s.g., though some parcels were in the market at 75*l.*, and the second-hand quotes lower rates.

HONEY.—With reference to the *English* crop, we hear from Lincolnshire that there is an abundance of honey in that county this season. Enormous quantities, larger than ever before within experience, have been offered for sale, and the quality is excellent. Bees are now kept by very many cottagers throughout Lincolnshire, and the largest beekeepers in the district have had double and sometimes treble the amount they had last year from the same number of hives. Prices range from 5*d.* to 6*d.* per lb. At Liverpool good pale *Californian* honey is selling at 32*s.* per cwt. An arrival of 240 packages *Cuban* honey has just been received at the latter port.

IPECACUANHA.—Another shipment of 33 bales arrived this week from Montevideo.

LEAD ACETATE.—The best white *foreign* may still be had at 26*s.* 6*d.* per cwt., but supplies are difficult to procure. *English* white, 29*s.* per cwt. brown to grey 21*s.* to 24*s.* per cwt.

LINSEED keeps up its value, and continues to be quoted at 39*s.* for *Bombay*, 38*s.* for *Calcutta*, and 37*s.* for *La Plata*. Good new *Dutch* seed is now on the market at 44*s.* to 47*s.* per 424 lbs., *Sicilian* at 46*s.*, and *Russian* at 37*s.* to 39*s.* Of *English* seed hardly any is forthcoming.

LIQUORICE ROOT.—It is reported that at the Nijni-Novgorod fair in Russia, one of the principal centres of the trade in this article, from 4 to 5,000 puds in excess of last season's supplies were offered this year, and that the average quality of the root is much higher. At present holders still stick to the old prices, but as the season proceeds lower values are likely to rule.

MUSTARD SEED.—There is a very steady inquiry for *white* *English* seed, at 10*s.* to 12*s.* per bushel. Foreign white seed is worth 7*s.* 6*d.* to 9*s.* 6*d.* per bushel, and *brown* *Bombay* is firmly held at 10*s.* 6*d.* to 11*s.* per cwt.

MORPHIA is still quoted at 7*s.* 6*d.* per oz. by the manufacturers.

OIL (CASTOR).—At Liverpool owners ask more money, and an advance has been paid. Good second *Calcutta* has been sold at 2½*d.* per lb.

OIL (COCOANUT).—The market remains steady, and prices are without much change. *Ceylon* has been done at 23*l.* 15*s.* on the spot, while for *Cochin*, according to quality, 31*l.* to 32*l.* is wanted. *Mauritius* oil is unchanged at 26*l.*

OIL (COD-LIVER).—The autumn business is now commencing, and a firmer feeling prevails in the market. One holder to-day quotes 3*s.* 10*d.* for fine non-congealing winter oil, and 3*s.* 4*d.* a gallon for good summer oil.

OIL (COTTONSEED).—On the spot, *Crude* is now obtainable at 19*l.* 5*s.*, and *Refined* at 21*l.* 10*s.*, while November-April is quoted here at 19*l.* Hull has advanced—spot, casks, 20*l.* 10*s.*; October, 20*l.* 7*s.* 6*d.*; November-April, 18*l.* 5*s.* Crude, spot, 17*l.* 15*s.* to 18*l.*

OILS (ESSENTIAL).—*Bergamot* is now quoted at from 8*s.* 9*d.* to 9*s.* per lb. for fine quality, and a further advance is expected. The Italian crop is said to amount to only one-fifth of last year's. *Star anise* remains quoted at 7*s.* 3*d.* per lb. *Cassia* is held at 2*s.* 8*d.* to 2*s.* 9*d.* per lb. *Peppermint.*—Mr. Albert M. Todd, peppermint distiller, of Nottawa, Mich., has issued a report, in which he states that the extreme drought, more severe probably than ever experienced in the West, has affected the peppermint crop most disastrously, especially what is known as the "second crop;" and growers were obliged to distil earlier than ever before, to prevent the loss of what few leaves still remained on the plants. That the effects of this drought are not exaggerated is confirmed by the fact that all the autumn maturing crops in this state are a complete failure—potatoes bringing \$1.00 per bushel, and

the corn crop being hardly sufficient for the home consumption. One of the large growers, Mr. Fisk, obtained but 40 lbs. of oil from thirty acres of plants, and there is very little of the upland mint which will yield above 5 lbs. to the acre. Low land mint has in some cases done better, but, unfortunately, the oil from such land is usually not as pure as that grown on the uplands, and even when pure it is not of so fine an odour. From the northern part of the State reports are equally poor, and from the most reliable reports obtained from Wayne County, N.Y., it is evident that the second crop is a very light one there as well. Some growers have already distilled their new crop; but during the past few days rains having set in and further distillation will be postponed, in the hope that if favourable weather continues the loss occasioned by the drought may be partly regained. Some most preposterous statements have been made by a New York speculator in a "bear" circular recently issued. He there maintains that "the crop of last year was one of the largest ever known, and that the plantings of last year are now in their prime." The facts are exactly the reverse of this statement. The crop of last year was below the average, and the reason that proportionately fair prices were not sustained throughout the year was owing to the extensive adulterating frauds carried on. Among these was the adulteration of thousands of lbs. of peppermint with oil of camphor and oil of pennyroyal. It was from such oil that the menthol had been first extracted in Detroit which the makers claimed to have been made "synthetically" from chemicals. After having thus adulterated the oil, some to the extent of 50 per cent., they sold it clandestinely through parties representing themselves as "distillers," at about 10 per cent. below the price of the pure quality. The arrest of the principal agent in this scheme has been effected, and he is now under bonds to the higher courts. Besides this, large quantities of peppermint have been sold from New York adulterated with oil of pennyroyal, and the reasons for the comparative low prices in oil of peppermint are to be sought for in these outrageous adulterations, not in an over-production, which has never existed. American peppermint, HGH brand, is offering in London at 13*s.* 6*d.* per lb.

OIL (LINSEED) has declined lately, and a fair business has been done at the lower rates. The article closes steadily, spot, pipes waterside 20*l.* 5*s.*, and 20*l.* 5*s.*, barrels 20*l.* 10*s.*, month 20*l.* 7*s.* 6*d.*, October-December 20*l.*, January-April 20*l.*, all next year 20*l.* Hull: spot, casks, 19*l.* 17*s.* 6*d.*, barrels 20*l.* 2*s.* 6*d.*, October-December 19*l.* 5*s.*, January-April 19*l.* 10*s.*

OIL (OLIVE) remains very firm at the recent quotations of 32*l.* for *Mogadore*, 35*l.* for *Sicilian*, and 37*l.* for *Spanish*. The persistent reports of damage to the crop have caused the Sicilian market to assume a decidedly upward tendency, and orders are being daily executed at Messina at steadily advancing prices.

OIL (PALM).—The market is not quite so firm this week, and prices are somewhat lower. Fine *Lagos* is now quoted at 22*l.*

OIL (TURPENTINE) is again quoted lower, but closes fairly steady. *American* spirit on the spot is quoted at 24*s.* 6*d.* to 24*s.* 9*d.*; September-December, 24*s.* 6*d.* For January-April 25*s.* 6*d.* has been paid.

OPIUM.—There is very little doing, the only business reported here being in new *Salonica*, at 20*s.* per lb. The Smyrna quotations are now fully 3*s.* higher than our own. The Dutch order, which is expected to have some influence upon the market, will be placed to-day, but it is not expected that the result will be known for some days. Smyrna mail advices to hand this week agree in stating, as we did in our last report, that the easier feeling which had been prevalent for some time had given way to a better state of things, and that the advance is once more in full swing. There is a very active demand from all the principal consuming quarters. On September 3 the arrivals at Smyrna were 293 baskets, against 2,295 at the same period last year, and it is stated that the weight of the baskets now arriving is about 15 per cent. under average. The Dutch Government is in the market for 400 cases opium of the new crop, 200 to be delivered at the end of November, and 200 in the middle of December. The adjudication has been fixed for September 15.

POTASH COMPOUNDS.—*Bichromate* is unchanged at 4½d. per lb., and *Chlorate* quiet at 6d. per lb.; yellow *Prussiate* is still selling at 7½d. per lb., and remains firm at that figure.

QUICKSILVER.—The importers' price has remained unaltered, at 7l. 12s. 6d. There are now second-hand sellers at 7l. 10s. 6d. A firm of brokers calculate the stock in London on September 1 at 54,000 bottles, against 67,500 bottles on the corresponding date of 1886. This estimate is rather higher than our own, but it agrees in placing the stock at what may be called a low figure.

QUININE.—Last week's second-hand quotations, so far as we can learn, still hold good. There is very little doing, and the results of Tuesday's cinchona sales were not such as to create a firmer feeling. The official price for *Howard's* brand still remains 2s. 4d. for bottles, 2s. 2d. for bulk.

SENNA.—We note further arrivals of 191 bales *Tinnevelly* per "Siam" this week.

SHELLAC.—The supply at Tuesday's auctions was very heavy, numbering 2,228 chests, part of which was evidently brought forward with the express purpose of depressing the market. This object proved successful, for prices declined on an average 2s. per cwt.; but shortly after the sale they rallied to some extent, and now quite half of the decline has been recovered. There is a very fair trade doing, 750 chests having been sold at the auctions, and fully 1,000 to arrive; and if the present feeling should continue, it is not improbable that the deliveries for September will be the largest of any month in the year. Telegrams received to-day by one of the principal importers confirm the statements of damage to the sticklac crop. The prices paid at the auctions were as follows: *First orange* ASSL, out of condition to fine, 55s. to 59s.; ditto unworked Calcutta weights and tares, 57s. to 60s. *Second orange* DA&Co. in triangle, unworked, fine bright, 48s. to 48s. 6d.; GN in diamond, unworked, good, 47s. 6d. to 48s.; livery, 46s.; JF in diamond, unworked, fair, 46s. 6d. to 47s.; BM in diamond, unworked, fair, 46s. to 46s. 6d.; DAC in diamond, unworked, fair, 46s. 6d.; KD in diamond, unworked, fair, 46s. to 46s. 6d.; NM in diamond and TN in diamond, livery 46s.; S in double-triangle, livery, 45s. 6d. *Garnet* AC good free 42s.; block 39s. 6d., BCB fine free ruby, 40s. Since the auction TN *second orange* has been sold at 49s. 6d. landed terms for December-February, and at 49s. for October-November shipment, and one parcel, for August-October shipment a shade under the latter price.

SODA COMPOUNDS.—*Ash* quiet, at 1½d. per degree landed. *Bicarbonate* is not quite so firm; 6l. 12s. 6d. per ton would now be the nearest quotation. *Caustic* quiet and slightly easier, at 7l. 5s. for cream, and 7l. 10s. for white 60-per-cent. *Crystals* lower, and obtainable at 52s. in London, but on the Tyne prices remain at 45s. to 46s. 6d. per cwt. Supplies are now more liberally forthcoming, *Nitrate* tending firm at 9l. to 9l. 5s. on the spot.

SPICES.—*Cassia lignea* remains dull and neglected. *Cloves* lower, at 10½d. for good Zanzibar, and 12½d. to 1s. 1d. per lb. for Penang. *Chillies* sold at a decline of 6d. per cwt.; good bright Zanzibar at 27s. *Cochin Ginger* quiet at unchanged rates; Jamaica very steady, 85s. paid for good bright. *Mace* steady, but in limited demand; 2s. 11d. was paid for good West Indian. *Nutmegs* quiet, but unchanged. *Black Pepper* is slightly dearer, while higher rates are asked for white.

SULPHUR.—The demand is less active. *Roll* is still quoted at 7s. 6d. to 8s. 6d. per cwt., and *Flowers* at 8s. 6d. to 9s. 6d. per cwt. We hear from Sicily that the long-continued depression in brimstone seems to have given way, many owners having reduced the output of their mines, and some others having altogether stopped working. Speculators who had largely sold without being covered, becoming aware of the real position of the article, are now doing their best to cover their sales, and an advance of about 8s. per ton has taken place in the course of only a few days.

WAX (VEGETABLE).—There are very few lots in the market at present, and prices have further advanced. At the end of last week 52s. per cwt. had been paid.

THE AMERICAN MARKETS.

NEW YORK, September 2.

OUR drug market has been fairly active, and a considerable amount of business is passing.

The prices sterling (in parentheses) are what the different articles would cost delivered in London, all market allowances, discounts, &c., being taken into account. Importers can therefore see at a glance the course of this market compared with their own.

ALOES (CURAÇAO).—The statements repeatedly made that shipments from Curaçao would cease, owing to the unprofitable returns to the producers, are not borne out by the large arrivals coming in year after year at falling prices. Last week 600 boxes arrived here, and are unsold.

BALSAMS.—No change to report in any but *Tolu*; 38c. (1s. 8½d.) has been paid for this article, and higher rates are predicted.

BARK.—*Casarea Sagraia* is higher, the stock on the spot is small, but quality is quoted 7c. (5d.). A parcel of *Simaruba* bark has arrived, but is not offered for sale yet. *Angostura* is in good supply at 12c. (7d.)

CUBEBS.—The market price asked is \$1.10 (27l.), but nothing is doing.

GUARANA has declined; probably 95c. (4s. 2d.) would now be accepted for some lots in bond.

HONEY.—There is no stock of *Californian* here, and reports from the West confirm the shortage of the crop there. New honey is quoted at 5½c. in San Francisco, or equal to 28s. 6d. c.i.f. English ports, first cost.

LEAVES.—There is not much demand for *Cocas*, and prices are unchanged, 40c. (1s. 10d.) for Huanoco, and 23c. (1s. 4d.) for Truxillo. Reports just received from Lima say the market there is falling, and stocks accumulating. *Damiana* is very scarce; none but very old to be had. In *Jaborandi* the market is bare of supplies. *Buchu*.—Some direct arrivals from the Cape sold at 5c. (3½d.).

OILS (ESSENTIAL).—*Sassafras* has gone up to 42c. (1s. 10½d.). *Wintergreen* is weakening. *Spearmint*, the new oil, is offering at \$4.00 (18s.); it will be cheaper. The *Pep-permint* oil market is very dull, no sales of any consequence taking place. For pure bulk oil \$2.25 (10s. 6d.) is asked. H. G. Hotchkiss is quoted \$3.00 (13s. 9d.), but there are no buyers.

POTASSIUM BROMIDE.—There is no change to report. The makers' price for quantity is 36c. (1s. 7d.), but second-hand holders will take less.

SENEGA ROOT.—The Western holders now say that no root is coming in, and that very little stock is left; the fact is, the price was put so low that the diggers and collectors went into something else, and now it is too late to secure any quantity. Here the price is 30c. (1s. 6½d.), but there is no demand; when that sets in senega must go much higher.

QUININE.—The movement is downwards. To-day B. and S. in large bulk sold for 35c. (1s. 6½d., 5 per cent.), and it is confidently predicted we shall see it 30c. It is almost time to quote this article by the pound instead of the ounce.

SPERMACETI is firm at 38c. (1s. 8d.); there is not much doing in it.

THE DUTCH MARKET.

AMSTERDAM, September 9, 1887.

CINCHONA.—At the public sales of cinchona bark held in Amsterdam on September 8, 341 cases and 786 bales Java, and 5 cases and 7 bales British Indian cinchona were offered for sale. Of this quantity 88 cases and 379 bales were from the Government plantations. All but 13 packages of low quality were sold, and the following prices paid:—

Manufacturers' bark:—Broken quills, 74c. to 86c. per ½ kilo.; chips, 24c. to 105c.; root, 25c. to 83c.; twigs, 9c. to 17c. The highest price of 103c. to 105c. was paid for 11 bales *Ledgeriana* chips, testing 8.55 per cent. sulphate of quinine.

The average unit of 12½c. (=2½d.) was in some instances

surpassed by 2½c. to 3c. The chief buyers were the French manufacturers and the Brunswick works.

Druggists' Bark.—Succirubra quills, 29c. to 104c. per ½ kilo.; broken quills, 39c. to 45c.; chips, 17c. to 31c.; root, 17c. to 26c. Calisaya quills, 69c. to 72c.; chips, 26c. to 38c.

Some of the 13 packages bought in at the auctions were afterwards disposed of. Considering the large quantities of cinchona shipped to Europe, and the depreciation of the manufactured articles, the unit may be considered a fair one. A good competition existed throughout the auctions. The manufacturing barks were mostly of medium quality, fine varieties being scantily represented. There appears to be an increasing demand for druggists' barks, and several lots of these fetched relatively high prices.

The next Amsterdam cinchona sales will take place on October 20.

CUBEBS.—The market continues to be firm, and the few owners of genuine berries decline to sell under 275c. to 300c. per ½ kilo. (= 23½ 3s. to 25½ 5s. per cwt.), whilst a further rise is expected ere long. It is a fact that fresh shipments of genuine cubebs from Java will be impossible before next spring, and that France as well as America, the chief consumers, are poorly provided. The stock here in first hand is about 100 bags, whilst the second hand may be estimated to dispose of not much more, if so much. The maximum price of 300c. has been paid this week for a small lot of superior quality.

CAJUPUT OIL.—642 bottles have been sold at about 2f. (= 3s. 4d. per bottle).

GUM BENJAMIN.—Fine second Sumatra held at about 140c. per ½ kilo. (= 11½ 15s. per cwt.).

COCOA BUTTER.—At public sale on September 6, 27,000 kilos. of Van Houten's brand were offered, of which first quality sold at 72½c. to 75c. per ½ kilo.; second quality at 72½c. to 73½c., and third quality at 72½c. to 75½c. Since then prices have advanced to 80c. for first quality, and 78c. to 80c. for second and third quality.

LAST MONTH'S TRADE STATISTICS.

THE Board of Trade Returns for August show the following figures:—

Imports.

	Aug., 1886	Aug., 1887
Total value	£27,321,354	£29,699,020

Exports.

	Aug., 1886	Aug., 1887
British and Irish produce ..	£18,744,859	£19,783,299
Foreign and colonial produce (partly estimated) ..	4,640,586	4,162,080

Below are the details affecting drugs and chemicals:—

Imports.

	Aug., 1885	Aug., 1886	Aug., 1887
Drugs, unenumerated .. value £	61,224	42,889	51,470
Chemical manufactures and Products, unenumerated .. value £	111,543	102,901	110,340
Dyestuffs, tanning mat., and crude chem. (unenum.) .. value £	115,836	99,791	124,516
Alkali cwt.	8,497	9,637	7,591
.. .. value £	7,427	7,686	5,574
Brimstone cwt.	74,694	20,987	36,842
.. .. value £	20,516	7,429	7,822
Nitre (nitrate of soda) .. cwt.	95,262	85,620	163,257
.. .. value £	53,755	43,705	73,445
" (nitrate of potash) .. cwt.	31,651	27,563	23,483
.. .. value £	24,033	26,083	19,653
Quicksilver lbs.	120,577	93,670	90,000
.. .. value £	9,519	8,120	7,530
Bark, Cinchona cwt.	7,963	11,009	10,305
.. .. value £	56,307	57,213	46,619
Gum Arabic cwt.	3,388	1,796	3,840
.. .. value £	12,532	7,600	13,392
Lac, seed, shell, stick, and dye .. cwt.	9,927	7,092	11,929
.. .. value £	31,149	18,733	30,216
Spices—			
Cinnamon lbs.	125,507	119,339	141,823
.. .. value £	4,837	5,137	7,285
Ginger cwt.	3,865	8,974	589
.. .. value £	6,696	10,855	609
Pepper lbs.	3,351,396	6,310,023	2,942,641
.. .. value £	100,389	196,988	129,261

Imports—continued.

	Aug., 1885	Aug., 1886	Aug., 1887
Dyes and tanning materials—			
Bark (for tanners' or dyers' use) cwt.	76,765	43,531	29,590
.. .. value £	32,717	17,981	10,033
Aniline dyes cwt.	20,815	23,409	21,978
Alizarine cwt.	15,709	23,404	22,451
Other coal-tar dyes cwt.	400	550	418
Cochineal cwt.	1,007	555	881
.. .. value £	6,107	3,474	5,474
Cutch and gambier tons	2,179	3,220	2,757
.. .. value £	45,416	75,679	65,363
Indigo cwt.	1,756	700	778
.. .. value £	23,557	12,356	12,616
Madder, madder root, garancine, and munjeet cwt.	1,337	1,901	899
.. .. value £	2,745	2,430	1,410
Valonia tons	3,263	2,361	2,805
.. .. value £	50,564	31,033	36,162
Oils—			
Cocoa-nut cwt.	10,469	11,793	6,989
.. .. value £	15,823	15,965	9,556
Olive tons	2,180	1,814	2,280
.. .. value £	85,525	68,292	77,307
Palm cwt.	97,241	71,431	115,057
.. .. value £	129,832	73,096	106,673
Petroleum gals.	4,922,962	4,827,462	5,097,811
.. .. value £	154,077	155,569	136,251
Seed, of all kinds tons	1,016	1,416	897
.. .. value £	28,696	34,284	22,308
Train, blubber, and sperm tons	2,519	2,330	2,598
.. .. value £	68,626	55,302	50,362
Turpentine cwt.	35,829	23,260	64,091
.. .. value £	46,274	30,974	81,216
Rosin cwt.	103,557	120,987	96,995
.. .. value £	30,031	38,884	22,178
Tallow and stearine cwt.	104,181	97,462	94,990
.. .. value £	157,247	122,722	107,951

Exports.

	Aug., 1885	Aug., 1886	Aug., 1887
British and Irish produce—			
Alkali cwt.	426,076	453,343	476,903
.. .. value £	127,900	126,783	135,223
Bleaching materials cwt.	110,498	129,387	119,893
.. .. value £	36,386	39,366	45,439
Drugs and medicinal preparations (unenumerated)	74,062	61,130	74,176
Other chemicals and medicinal preparations	159,836	161,126	186,303
Chemical manure tons	144,413	128,507	151,138
Oil, seed value £	5,004	3,794	4,910
.. .. cwt.	117,534	85,055	106,758
Soap value £	23,411	35,544	33,675
.. .. cwt.	34,379	35,127	34,459
Painters' colours and materials (unenumerated)	99,681	96,991	125,694
Foreign and Colonial merchandise—			
Bark, Cinchona cwt.	8,425	7,960	9,395
.. .. value £	43,521	36,580	20,042
Chemicals (unenumerated)	16,369	11,132	18,637
Cochineal cwt.	1,033	870	498
.. .. value £	6,350	5,793	3,251
Cutch and gambier tons	925	1,077	678
.. .. value £	18,252	27,740	18,034
Gum Arabic cwt.	4,984	4,338	5,077
.. .. value £	17,123	18,005	22,086
Indigo cwt.	3,223	3,248	2,081
.. .. value £	67,915	59,183	42,519
Lac (various kinds) cwt.	4,455	4,509	6,307
.. .. value £	13,903	10,545	15,810
Lard cwt.	2,505	2,216	2,257
.. .. value £	4,954	4,188	3,126
Oils, cocoa-nut cwt.	9,919	8,628	3,058
.. .. value £	15,178	12,614	221
" olive tons	163	216	7,592
.. .. value £	8,515	9,115	27,883
" palm cwt.	21,340	24,989	26,800
.. .. value £	23,820	25,885	27,772
" petroleum gals.	59,876	35,509	1,216
.. .. value £	3,848	1,356	468,300
Quicksilver lbs.	486,673	296,411	42,936
.. .. value £	36,709	26,699	3,345
Nitre (nitrate of potash) cwt.	7,064	1,768	2,768
.. .. value £	5,929	1,454	84,600
Spices, cinnamon lbs.	118,026	72,635	3,486
.. .. value £	4,580	2,239,706	1,933,400
" pepper lbs.	1,947,659	67,634	62,824
.. .. value £	66,009	16,257	35,060
Tallow and stearine cwt.	5,384	18,452	38,130
.. .. value £	8,012		



The Irish Pharmacy Act.

SIR,—I have read with very mingled feelings the letters in your journal lately relating to the Irish Pharmaceutical Society. There is in particular one letter which I will try to answer briefly. Coming, as it does, from the pen of one of the oldest pharmacists in Ireland (Mr. R. J. Downes), I do not think it should be let pass without some notice being taken of it. He begins first by quoting your words, "the Council do not deserve sympathy;" but, sir, let me tell you the Council deserve the greatest sympathy from their members and licentiates; anyone who has watched them closely for months must see that they are doing their utmost to carry out the Act by prosecuting offenders, and although they may fail, still no one can say they are not doing their duty. It was only through a slight legal point they were defeated in Belfast. I trust the Council will still continue the work they have begun, and not allow a few failures to dishearten them in putting a stop to the illegal work which is spreading rapidly through this land.

Your correspondent, Mr. Downes, attacks the Council on its examinations. "The Preliminary examination is not at all necessary; do away with it," he says in effect, and holds that they are not entitled to have one at all. Is it because Mr. Downes holds ideas like those, differing, I believe, from every pharmaceutical chemist, every college of education in the world, that the Irish Council are to give up the Preliminary examination? I always gave Mr. Downes credit for holding higher ideas of education than these; and before I close this subject I would like to refer him to your issue of September 3, 1887, and read the "Question of Education," on page 276, where the President of the Pharmaceutical Conference says: "I do most emphatically protest against the injustice of allowing youths to enter a calling the conditions of which have never been explained to them." I think I need not give Mr. Downes further proof that the Preliminary examination is essential to youths before they ever dream of pharmacy. I certainly hope he may still continue to be a member of the society; but I trust the Council are not going to let him be spokesman for them on all points. I remember an old saying, "Two heads are better than one," and, if true, surely the number on the Council can decide what is right and just better than Mr. Downes.

His little bit of pleading for "the old druggist" is certainly very good; but the old druggist, I take it, was alive at the time the Act passed, and had a right to avail himself of the year of grace and come forward to pass his examination, and not be trying now to dodge the Council and leave himself open to prosecution. Does Mr. Downes think the Council have nothing to do but, when they find a man committing himself, to go to him and implore him to go up for examination?

I cannot agree with Mr. Downes that there are ten wholesale men on the Council. Would he please to name them? Surely he cannot mean that Drs. Collins, Owens, Montgomery, Evans, and Tichborne are wholesale men, because they have shares or are connected with the Apothecaries' Hall. You might as well call Mr. Allen a publican if he had a share in Guinness's. I believe the Council is constituted as follows:—Twelve retail pharmacists keeping open shops, five medical doctors, three wholesale chemists, one wholesale and retail. I certainly agree with Mr. Downes, that no member of Council should be connected with a wholesale house, still I cannot forget that they helped materially to bring about the Irish Pharmacy Act.

I would urge on the Council the necessity of seeking further measures from Government so as to protect our interests, as at present the law regulating pharmacy in this country is totally inadequate to protect them. It would be well if the members turned out in force at the yearly meeting and gave the Council the benefit of their opinions. It is only a question of two hours in the year, and I am sure any of us can spare that time.

A question arises, and I should like it well tested. Is it necessary to have a register of chemists and druggists at all? I don't think so. The Act says the Council may, at their first or any subsequent meeting, by a resolution, determine upon allowing certain persons to acquire the title of chemist and druggist, &c. Rule 3, Regulations, says, "The examination of persons desirous of being registered as chemists and druggists under this Act,"—(now mark!)—"in case the said Council shall think proper to allow persons to acquire the title of chemist and druggist." I think this is very plain. The Act says the Council *may* (it is not the Council *must*), if they deem it right and correct to do so. Then, again, the Act says, "in case the Council think proper to allow them." I cannot see that they are compelled to have a register of chemists and druggists at all.

I thank you for your kindness in allowing this subject to be argued in your columns.

I am, sir, yours faithfully,

GEO. LANE MCCORMACK.

Monkstown, Dublin, Sept. 13.

SIR,—The article in your issue of August 20, entitled "The Breakdown of the Irish Pharmacy Act," was entirely premature; the failure of the second charge for the selling of poison (laudanum) being caused, as Mr. Brunker has already stated, by the omission of the prosecution to put before the Court sections 15, 16, 17, &c., of the Act. Therefore there was no "breakdown" in the Act, as has now been clearly proved in this second prosecution, which occurred in Belfast last week, for the selling of poison (oxalic acid). In fact, I consider the Irish Pharmacy Act superior in many respects to that of Great Britain, even in the matter of there only being one qualification, that being all that is required; for the experience of your two qualifications has shown that the second or Major examination, which is entirely optional and honorary, has turned out a comparative failure and unnecessary; wherefore the Irish Pharmaceutical and Privy Councils acted most wisely in coming to this decision. [Our correspondent then proceeds to recite the facts of the case in Belfast, which is fully reported in this issue, and strongly comments upon the fact that Sir James Haslett was called as a witness, and sat upon the magisterial bench.] I understand (he continues) that this case is likely to be brought forward again, and if justice should miscarry this time it will then be essential to thoroughly expose, in the two proper quarters, the conduct of this magistrate, from the time he entered till his leaving the Court, inclusive of the beautiful after-address he delivered, which was so full of heavenly sentiments, and so expressive of all that was disinterested, self-sacrificing, with peace and goodwill to all men, although, as I said before, summoned as a *witness*. As a witness, however, he was not wanted, but only his august presence.

A BELFAST PHARMACEUTICAL CHEMIST. (159/27.)

Graduated Bottles.

SIR,—Much has lately been said in the correspondence and in your articles on labels regarding the advisability of the use of graduated measures for the use of patients taking medicine, and such labels as—

As domestic spoons vary in size, it is always advisable to use graduated measures when taking a dose of this mixture.

have been frequently recommended for use.

It is usually the custom of the prescriber, when writing a prescription, to calculate the quantity of each ingredient by multiplying the required dose by the number of spoonfuls intended to be sent. Now, it is generally understood that graduated bottles are anything but accurate in their supposed capacity; and if eight or sixteen doses were intended for the patient, and if measured by an accurate measure-glass by him, he would, most certainly, in some cases find a deficiency—showing that he had taken more than an eighth or a sixteenth each dose—and in others a portion still remaining in the bottle over the number intended, thus proving he had been taking less than the required quantity each time. This is an important item, and demands attention. Some pharmacists direct the patient to take one-eighth or one-sixteenth of the mixture, giving at the same time the

mixture in a graduated bottle. This would overcome the difficulty if the graduations could be relied upon, but they cannot, some doses being much in excess of the others. With a view to getting some idea of the incorrectness of dispensing-bottles in use, I have obtained several from different sources and measured them. I annex my results :—

Size	Graduation	Measured	First dose	Indis- crimi- nately taken between	Last dose
1. 8 oz.	two tablespoonfuls	8 oz. ..	correct	correct	correct
2. "	one tablespoonful	8½ " ..	"	"	3v. ..
3. "	"	7½ " ..	"	"	correct
4. "	two tablespoonfuls	8 " ..	3vj. ..	"	3ix.
5. "	"	8½ " ..	correct	3x. ..	3ij.
6. 6 oz.	one tablespoonful	6 " ..	"	correct	3vj.
7. "	"	6½ " ..	3v. M20	"	3v.
8. "	"	6 " ..	correct	3v. ..	correct
9. "	"	6½ " ..	"	correct	"
10. 4 oz.	"	4 " ..	"	"	1vss.
11. "	"	4 " 3 drs.	"	"	3v.
12. 2 oz.	teaspoonfuls ..	2 " ..	"	M70 ..	correct
13. "	" ..	15 drs. ..	"	correct	"

I hope that we may get at a more definite method of dosing, which I must own is greatly needed.

Yours truly,

LIGNUM. (156/45.)

Soluble Essence of Ginger.

SIR,—My experience of this elegant (?) preparation is much the same as "Gratitude's"—all the published processes are more or less failures. I have succeeded, with a modification of the alum process, in obtaining an essence which contains more of the pungent principles of the ginger than any other soluble essence which I have seen. Take the tinct. zingib. fort. to start with, and add to it, if desired, any other flavours, such as vanilla, lemon, cassia, or pineapple, which are required for a ginger-ale essence. Mix 2½ pints of the tincture and the same of water in a gallon bottle, then add ½ oz. of powdered alum, which precipitates the fat, with only a trace of resin. Shake occasionally for an hour or two, then filter through paper, and add to the filtrate ½ oz. of light carbonate of magnesia, which precipitates the alum so that only a trace remains in solution. Shake and filter as before, and as the filtrate is not absolutely clear, and cannot be made so without removing much of the pungency, add 4 oz. of rectified spirit. This makes the essence perfectly clear and soluble in 20 parts of an aqueous menstruum, so that it affords a clear syrup, and sparkling, bright ginger ale. The essence contains nearly the whole of the resinous principles of ginger and some of the fat. It keeps well, does not deposit, and is of a clear straw colour.

If "Gratitude" tries the method, he will be pleased.

Yours faithfully,

ZINGIBER. (151/66.)

Toughened Glass.

SIR,—A lady customer of mine bought from me a small quantity of comp. liquorice-powder. On mixing up a second dose of it, she allowed the glass containing the powder to stand for a minute or two while she was engaged in the adjoining room. Suddenly she heard a loud explosion, and on returning to the place where she had left the medicine the glass was found completely demolished.

Doubtless this is another case of toughened glass; but I would like to get your valuable opinion on the matter.

NEMO. (156/21.)

[It is highly probable that the glass was made of ordinary glass, imperfectly annealed.]

Ointment Pots.

SIR,—I have a set of jars which have been in use more than thirty years, they are in perfect order, neither oozing nor discoloration about any of them, and they look well on their shelves.

They are glazed stoneware, stamped "Doulton & Watts, Lambeth Pottery, London."

It cannot be difficult to procure this ware, which I think ought to be better known. If "Hard-pushed" should ever visit this part of the country I should have much pleasure in showing the jars to him.

I am, sir, yours truly,

Crediton, Devon, August 29.

WILLIAM JACKSON.

P.S.—Can anything in glass or composition equal a well-shaped Wedgewood mortar?

Medicine Stamps.

SIR,—Do you not think it would be a great convenience if the Inland Revenue would arrange to reduce the stamp (patent medicine) to 1d. in the shilling, and allow the 1d. post and revenue stamp to be used? They would lose 5 per cent. [!] on the price, but many more articles would be stamped. The distribution would be simplified and the sale of patents much increased, as many articles, nominally priced at 1s. 1½d., would be sold at 1s.

Perhaps if you, as representing the trade, were to bring it to the notice of the department, the suggestion might be adopted.

Yours truly,

202 Caledonian Road, Sept. 5.

E. WARRELL.

LEGAL QUERIES.

156/6. *E. Warburton*.—The seidlitz powders which you send do not contain Rochelle salts, but are simply bicarbonate of soda and tartaric acid. It would be difficult to get up a case under the Sale of Food and Drugs Act against the seller of the powders as seidlitz powders.

156/42. *Botanic Beer*.—It is the case that the excise only permits 2 per cent. of proof spirit in fermented liquors to be sold without a licence, and if your customer wishes to escape prosecution he should take out a licence or sell a poorer beer. The alcoholic strength may be reduced by using less sugar; but it is a matter of considerable difficulty to ensure at all times that the brew contains no more than the 2 per cent. of proof spirit.

158/61. *J. J.*—It has been decided in Scotland that a limited liability company may use the title "Chemist and Druggist," but the decision does not apply to England.

159/2. *Patent*.—Any objection to the registration of a trade-mark should be addressed to the Comptroller at the Patent Office. You are wrong, however, regarding the linctus; it is the label, and not the title, for which application is made.

159/9. *Anxious*.—An unqualified man may not assume the title "Chemist and Druggist" and sell poisons because his son is qualified and manages the business.

159/30. *Un Pris*.—You should bring the matter under the notice of the Secretary of the Pharmaceutical Society; but we question if anything can be done to stop the sale.

159/48. *Chemists*.—An unqualified person engaged in retail trade cannot call himself a wholesale druggist, or sell poisons. There is nothing to prevent him dispensing and selling non-poisonous drugs and chemicals.

156/22. *F. B. Bingley*.—We understand that the attention of the authorities has frequently been called to the matter—apparently without result.

160/17. *Eggarbee*.—See reply to "M. H. J." in last issue. No other person can use the same design if you get it registered.

160/9. *Thurra*.—A company of unqualified persons must be "limited" in order to carry on legally a drug business in its entirety—that is with a qualified manager.

160/13. *York* asks :—"Are the trustees of a deceased chemist allowed to carry on his business for the benefit of the children, employing, of course, a qualified man?" [Yes.]

DISPENSING NOTES.

[The opinion of practical readers is invited on subjects discussed under this heading.]

A Cinchona Mixture.

Potassii iodid...	..	..	..	gr. xl.
Potassii bicarb.	..	..	..	3ij.
Syr. zingiberis	..	..	..	3vj.
Dec. cinchonæ ad	..	..	..	℥xij.

Ft. mist.

I have prepared the above for several years with decoct. cinchonæ made from the thick flat yellow bark of the B.P. 1867, and the mixture has differed little in colour from the decoction itself, the salts only causing a deposit.

On ordering another supply of cortex cinchonæ flavæ from a Birmingham house, I received it in the form of large "quills," with a label to the effect that no more of the thick inner bark could be had. On making the decoction from this bark, and adding the salts to it, when quite cold, an effervescence took place, leaving the mixture, when finished, like curds and whey, and of a light yellow colour.

Can any of your readers explain the cause of this change in the appearance of the mixture?

Yours faithfully,

E. B. (155/29.)

[Large quantities of flat yellow bark are still obtainable, and the bark is sold frequently at the drug sales in Mincing Lane.]

Ung. Pagan.

SIR,—What is meant by "ung. pagan" in the following prescription :—

Ung. pagan	..	..	..	..	3ss.
Vaseline..	..	..	..	..	3j.

Ft. ung.

Is it a private formula? I can find nothing that has a name similar.

Yours truly,

UNGUENTUM. (153/27.)

Lapsus Pennæ.

SIR,—I had the following prescription handed in the other day :—

Quinina et ammon. cit.	..	..	..	3iij.
Sp. ammon. arom.	..	..	..	3ij.
Aque ad	..	..	..	3viij.

3ss. t. d. s.

Is there any such a preparation as "quinina et ammon. cit.," or was ferri et quinina cit. meant?

GEP. (159/14.)

[Considering the dose, it is quite as likely that the prescriber means ferri et ammon. cit., but this can only be decided by consulting him. There is nothing called quinina et ammon. cit.]

Chlorine Mixture.

SIR,—Would you kindly inform me, through your columns, how the following should be dispensed and what is intended? as the customer says what I gave her is much stronger than what she has had elsewhere, and that she cannot use it :—

Potass. chloratis	..	..	..	3ij.
Acid. hydrochl. dil.	..	..	..	3ss.
Aque ad	..	..	..	3viij.

M. Ft. gargar. m. d. u.

Yours truly,

CHLORINATA. (157/56.)

[Place the powdered chlorate in the bottle, add the dilute acid, cork, and heat slightly; when chemical action ceases fill up the bottle with water. Some dispensers dissolve the

chlorate in the water and add the acid. In this way chemical decomposition takes place slowly, and the first method is considered the better. Perhaps your customer has been accustomed to the second.]

MISCELLANEOUS INQUIRIES.

154/40. *F. W. Wood*.—Spanish Earth.—The Spaniards use a white earth, which they call "yeso" or "gesso," in the manufacture of wine. This earth contains baryta. A patent has been granted in this country for a preparation used for refining beer. When added to the liquor an insoluble salt of barium is formed, and this in depositing carries the suspended impurities with it. Try a mixture of 5 parts of prepared chalk and 1 part of alum.

154/67. *Chilblains*.—It is evident that your customer has forgotten the proper name of the article.

68/154. *Month*.—Iodoform Test for Alcohol.—This test, as originally designed by Lieben, consists in adding a crystal of iodine and a few drops of solution of potash sufficient to make a clear solution. This is rather a rough method, but as modified by Hager it is much more delicate and is capable of detecting 1 part of alcohol in 2,000. Take 10 c.c. of the suspected liquor, which should be clear, add 5 or 6 drops of 10-per-cent. soda solution, and warm to 50° C. Then add drop by drop, constantly agitating, a solution of potassium iodide fully saturated with iodine; the mixture after the addition of this solution should have a yellowish-brown colour. Now add soda solution to decolorise. If alcohol be present iodoform is gradually deposited at the bottom of the tube in yellow crystals, which may be recognised by means of a lens.

153/40. *T. Casely*.—Probably the dusting powder which you refer to is oleate of iron. That and other oleates (especially of zinc) are used as dusting powders for various skin diseases.

157/56. *J. Burnside*.—Try any bookseller.

155/65. *C. B.*—Chloral and bromide of potassium (25 grains of each) as a sleeping draught at night, and teaspoonful doses of Easton's syrup three times a day will do your intemperate friend good. Teaspoonful doses of tr. zingib. fort. in a glassful of water allay the craving for drink.

153/36. *Bon Accord*, who has been reading our article on "Hay Fever," writes :—"When I dispense ipecacuanha powder (usually the pulv. ipecac. co.) I plug my nostrils with cotton-wool, but even the best of precautions which I use fail, as the least particle sets me sneezing violently, and there is little sleep for me that night. The bronchial tubes get congested, and my breathing very oppressive. I have tried several cures, but find no relief. Do any of your readers similarly afflicted know of a 'reliever'?"

J. L.—Freezing Mixture for Teeth Extraction.—A solution of absolute phenol 1 part in 5 of pure ether is generally used. The following has also been recommended :—

Pure ether	..	..	..	..	3iss.
Menthol	..	..	..	..	3j.
Fl. extract of Indian hemp	..	..	..	..	gtt. xx.
Oil of peppermint	..	..	..	..	℥xv.

M.

Freezing mixtures (which are of little use) have been largely superseded by cocaine.

17/155. *Nc Sutor*.—Only the large emigrant vessels as a rule carry dispensers, and the selection of these is generally left to the surgeon.

153/59. *Auld Killie*.—A formula for tr. strophanthi was given on page 285. The following is the formula for Bate's Unguentum Crinisum, a preparation for the hair, which is probably what you require:—Labdanum, 6 drs.; bear's grease, 2 oz.; honey, $\frac{1}{2}$ oz.; powdered southernwood, 3 drs.; ashes of red root, $1\frac{1}{2}$ dr.; oil of nutmeg, 1 dr.; Peruvian balsam, 3 drs. Mix.

154/7. *K. K.*—We have observed a green organism in very dilute phosphoric acid, also in solutions of phosphates. Is it this that you have found? It can only be prevented by diluting the acid with boiled distilled water, and keeping the solution well corked and in a dark place.

153/55. *Tragacanth*.—*Lemon Squash*.—Here is another way to make the syrup which may suit you:—

Lemons (fresh)	12
Granulated sugar	3½ lbs.
Water	20 oz.

Grate the yellow peel off the lemons and beat it well up in a mortar with $\frac{1}{2}$ lb. or more of sugar. Express and collect the juice of the lemons, mix with the water, add the sugar and the contents of the mortar, heat until dissolved, and strain. You may strengthen the lemon flavour by adding some soluble essence of lemon.

Love Powder.—A pennyworth of this was asked for, and one of our subscribers gave starch scented with patchouli.

Aperient Preserved Walnuts.—Replying to *Chocolate's* request, Messrs. Coles & Co. (Reading) write:—"We used to prepare green walnuts for use as an aperient medicine by boiling them in syrup until tender; bottle and keep well corked."

153/26. *Scruple*.—*Condy's Fluid* is understood to be made from permanganate of soda, and contains about 2 per cent. of that salt. We do not know the composition of the cough linctus sold by the Army and Navy Stores; nor do we know what the price of it is. *Scruple* sends the following bit of information:—To remove stains from mortars, rub round the inside with a little oil of vitriol, and then fill right up with boiling water.

155/26. *Old Wulfrunian*.—*Cough Lozenges*.—To 28 lbs. of lozenge paste (powdered sugar made into a paste with acacia mucilage) add 3 oz. of powdered ipecacuanha, 1 oz. of tartaric acid, $\frac{1}{2}$ oz. of oil of anise, and sufficient extract of liquorice to give the mass a colour. Roll out and cut in the usual way. (See *DIARY* for 1887.) We gave a formula for an excellent lozenge on page 543 of last volume.

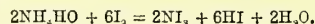
155/27. *C. T. C.*—The size for cotton threads (or elbs) is made of fish glue or gelatine. Steep, say, 1 lb. in its own weight of water, add 1 oz. of chloride of magnesium, 16 oz. of water, and dissolve by heat.

153/33. *W. H. Williams*.—Read the legal report on page 737 of last volume. The proper "H. Kimpton" is at 82 High Holborn, W.C.

152/28. *Tannin*.—Judging from the sample which you have sent, we do not think that you can profitably undertake the purification of the tannin. At least twice its weight of ether will be required to purify it; and unless you have the means of recovering that solvent, you would be better to throw out the tannin. You should dispose of it to one of the firms with whom you have been in correspondence. Probably you may find a buyer through our Exchange column.

154/30. *F. B. T.*—No oxygen is absorbed during the reaction between ammonia and iodine in the formation of

Iodamides. (You erroneously term the black compound a fulminate; but that term is reserved for a class of salts which are polymeric with the cyanates and cyanurates.) The exact composition of nitrogen iodide is not known, for it is variable; but taking Dupré's formula, NI_3 , the following may be taken as the reaction between hydrate of ammonium and iodine:—



155/5. *Destruction*.—*Aqua Toffania*, or *Acquetta*, the poison made by an Italian woman in the seventeenth century, was an arsenical preparation, made, according to Pope Alexander VI., by distilling aquafortis with arsenic; but another authority stated that it was a solution of arsenic in aqua cymbalariae (a preparation of a highly poisonous dropwort).

153/11. *G. W. F.*—*Liquid Dentifrice*.—The sample sent owes its saponaceous character to quillaia. The following formula will make a similar preparation:—

Quillaia, in coarse powder	1½ oz.
Honey	1 "
Rectified spirit	6 "
Water	q.s.
Oil of lavender	40 drops
" bergamot	20 "
" citronella	2 "

Digest the quillaia in the spirit and 6 oz. of water for a week, shaking occasionally, then filter. Dissolve the oils in the filtrate, and the honey in 4 oz. of water, mix with the tincture, add sufficient proof spirit to make 1 pint, and allow to stand until clear.

154/64. *Physostigma* (Lucia).—We have not examined the strong gum referred to. *Tar Oil* (*Oleum Picis Liquidæ*) is an oil obtained from wood by distillation. A similar oil (ol. picis rect., or spirit of tar) is obtained from coal tar. Both are used for skin diseases. The best and simplest *Test for Arrowroot* as distinguished from cassava starch is the microscope. True arrowroot is composed of ovoid or truncated granules with a distinct hilum or nucleus and concentric striæ; cassava granules are generally muller-shaped, and do not have the striæ.

158/23. *C. Ingham & Co.*—Neither the Pharmaceutical Preliminary nor Minor examination certificate is accepted by the Royal College of Surgeons. The fact of a man being a chemist and druggist will exempt him from the practical pharmacy portion of the medical examination.

The B. P. C. Formulary.

A sentence in the official report in our last issue erroneously conveyed the impression that the 6d. copies of the Formulary would be interleaved; but this is not so. We are requested to state that only the 1s. copies will be in this style.

157/48. *A. Burns*.—Try the B.P.C. Formulary form. It gives a syrup of similar composition but of different appearance.

Information Wanted.

[Replies to the following requests are solicited by correspondents of THE CHEMIST AND DRUGGIST.]

150/49. Solar oil: said to be used in hen farms. It is mixed with sand and sprinkled about. What it is, and where procurable.

153/54. Makers of bird-cage water-bottles.

153/46.—Formula for Odoniptic (a preparation for the teeth).

155/37. "Valerian Cabon's Tail"; what is it?

158/46. Formula for black composition for gun-sights.

156/68. Where to get show diagrams executed on linen with marking ink.